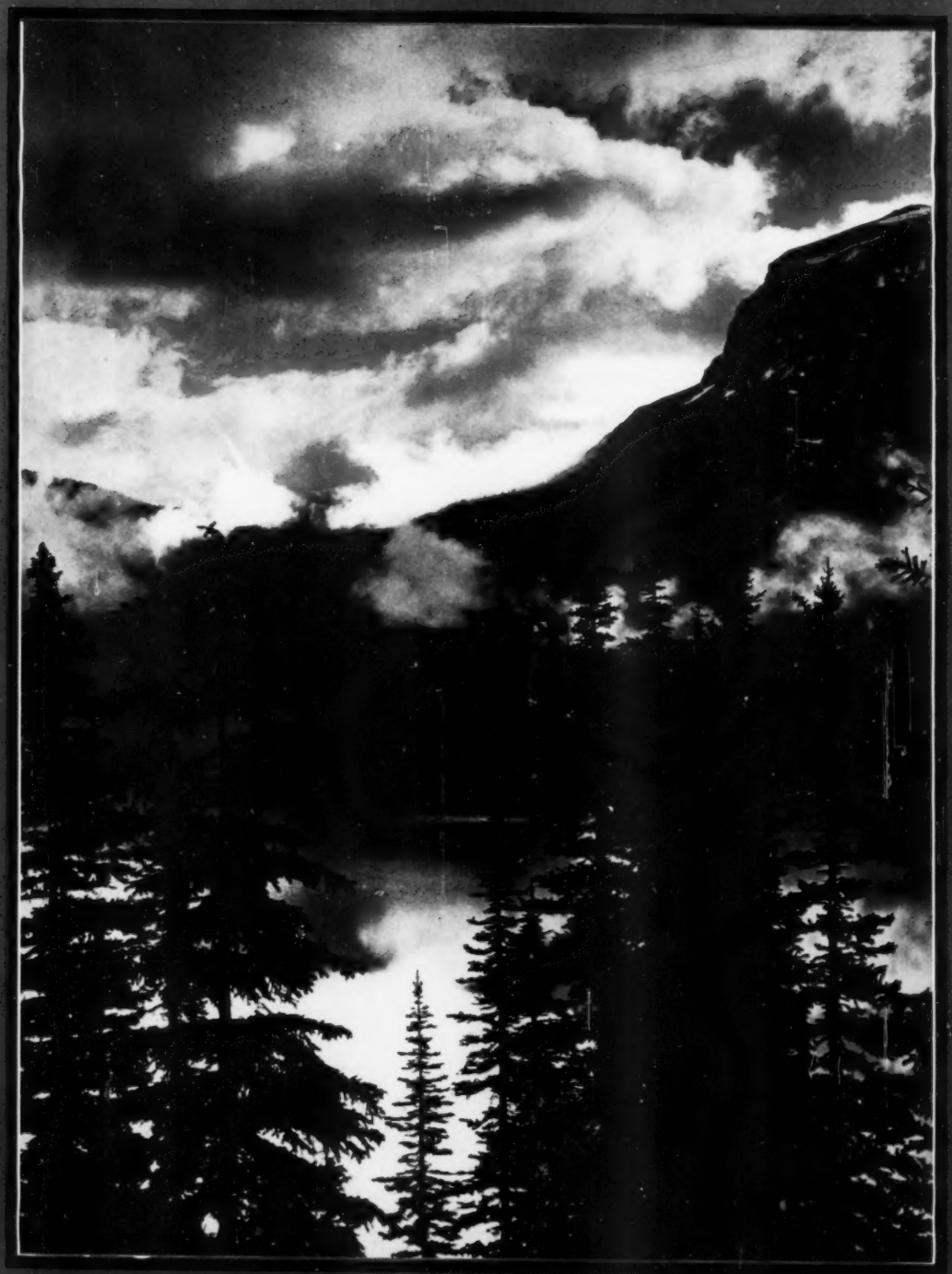
American FORESTS



FEBRUARY 1934

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BUT IT'S FAIR AND WARM BY TELEPHONE!

Outside, hurrying feet plod on against the winds and swirling snow of winter. On such a day, it is good to be indoors where all is snug and warm.

• • •

ALL outdoors may be frowning, the thermometer close to zero, street travel an exhausting task. Yet to your telephone it is as clear and fair as a day in June.

Without moving from your chair at home or in your office, you can send your voice across the snow-swept miles. Wind and weather need not delay the necessary tasks of business or break the ties between friends and relatives. Through all the days of the year, the telephone is your contact with the world beyond your door. It knows no season—no letting up when the going gets hard. Through storm and flood, an army of trained employees works ceaselessly along the highways of speech.

This very day, as you talk so easily from the warmth and comfort of your home, a lineman may be scaling a pole far out on a frozen mountainside—so that the service may go on. So that you may talk to almost anyone, anywhere, at any time.

Make someone happy these winter days through a voice visit by telephone. A boy or girl at school, a mother or father in another city, or a good friend away on a visit. To most places 175 miles away, for example, the rate for a station-to-station call is 95c in the daytime, 85c after 7 P. M., and 55c after 8:30 P. M.

BELL TELEPHONE SYSTEM

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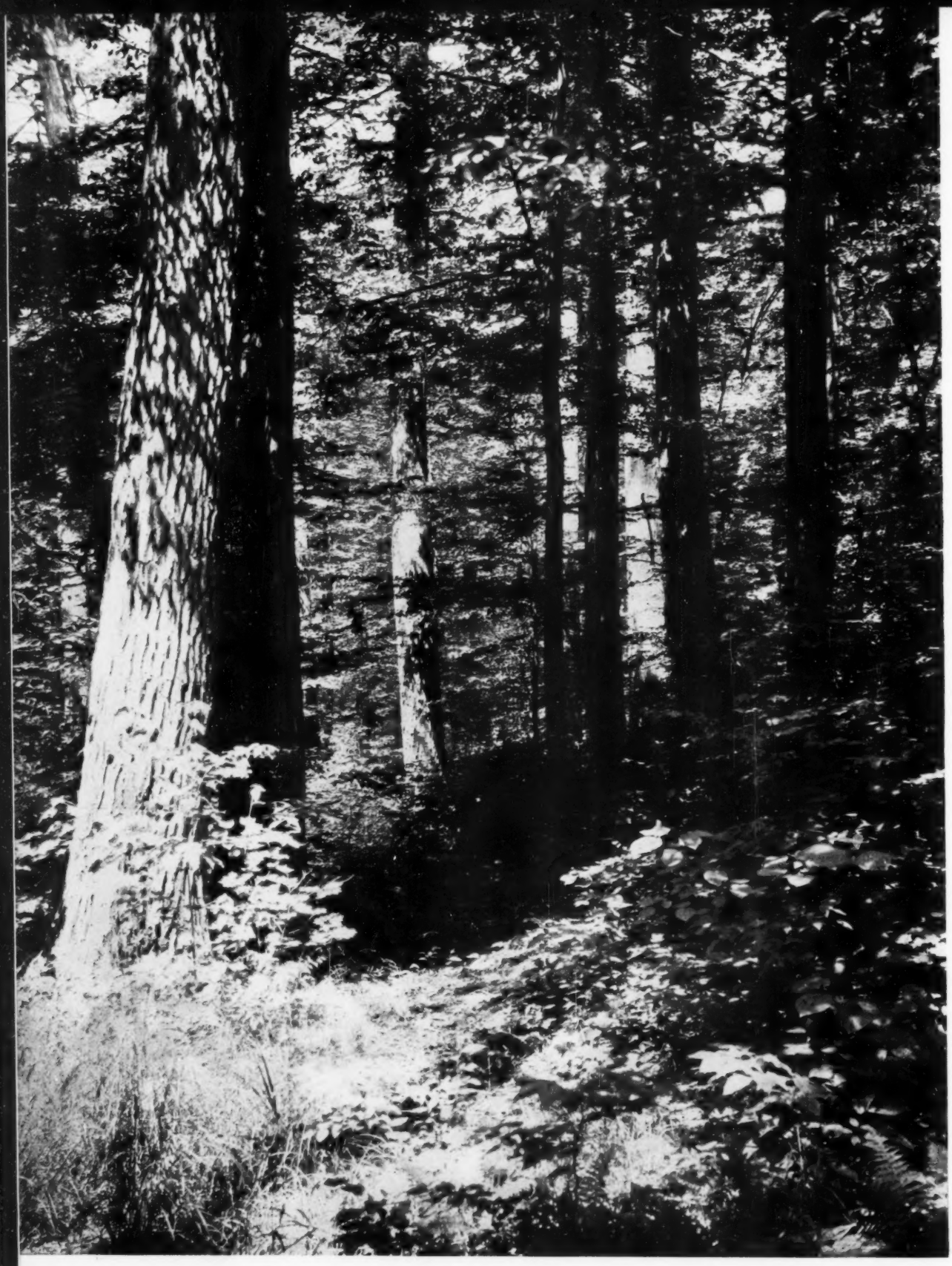


In the "Thousandth Acre"—where man has scarcely set his mark—an opening among the hemlocks on Cherry Run. Here in the virgin forest, one is conscious of a different atmosphere, as in a great closure pillared by magnificent hemlock trunks, roofed by canopy above canopy of green needles, and carpeted by five centuries' fall of the same rich fabric, no longer green, but brown.

THE THOUSANDTH ACRE

By

REGINALD D. FORBES

PHOTOGRAPHS BY A. F. HOUGH and H. F. MOREY

THE first snow of the season was falling as we turned southward from the Lakes-to-Sea Highway, near the tiny settlement of Wetmore, Pennsylvania, to visit the Thousandth Acre on Tionesta Creek. But before we reached it we had to traverse some of the nine hundred and ninety-nine.

At the top of the hill north of the creek, just as the car skidded down the slippery clay road, the buttressed stumps of giant white pines in a roadside pasture were limned against the whitened earth. Farther down the stumps became fewer, and to the practiced eye were recognizable as hemlock, or occasionally as hardwood. Then came telltale evidences of bygone fires, and from a bench half way down the hill the whole slope became visible as a desolate shambles of charred stumps and blackened skeletons of mighty tops left by the lumbermen when they removed the logs years ago. A few dwarfed and stunted fire cherries and aspens, now leafless, had made gallant effort to reclothe the ravaged hillsides, but had themselves felt the scourge of later fires. At the foot of the hill Tionesta Creek, muddied by unchecked rills scouring these bare slopes, flowed sullenly.

On foot we started up the opposite hill. The north slope was better clothed. In fact, wherever fires had been absent since logging a beautiful stand of slim maples, birches, and beeches, together with stouter trunks of fast-growing black cherries, had succeeded the virgin forest. Only the hemlocks were missing, except as overtopped seedlings and saplings. At last we won the plateau south of the creek and glimpsed, a mile or more ahead of us, sombre yet beckoning, the Thousandth Acre.

There are roughly 18,000,000 acres of forest land in the territory of the Allegheny Forest Experiment Station—the States of Delaware, Maryland, New Jersey, and Pennsylvania. Creditable as has been the effort of foresters and conservationists in these States, even this vast acreage does not begin to supply our own requirements for forest products, or to satisfy our ever-increasing need for water conservation, hunting, fishing, and recreation. It does not do these things partly because several million acres of the eighteen were reduced to idleness by ax, saw, and particularly fire, long before Americans awakened to the fact that our forests are worth conserving; partly because the capital of wood so far stored up in second-growth forests yields small interest in the form of sawtimber; and partly because we know pitifully little about the behavior of our trees, and how we may help the forest to fill our manifold needs. It is because of our ignorance of how to practice well-rounded forestry that foresters and conservationists alike are beginning to value the Thousandth Acre.

Nine hundred and ninety-nine acres of forest land out of a thousand in the Al-

Hemlock and beech stand in godly fellowship in Tionesta Forest—now nearly the sole remnant of that "Black Forest" for which Pennsylvania was famous in the days when she stood first among all the States in lumber production.

legheny territory have been cut over. The thousandth acre is virgin timber.

The virgin timber that lay ahead of us on the plateau and slopes above Tionesta Creek is the largest remnant of original forest between the Adirondacks with their spruce and fir and the Great Smokies with their oaks and poplar. It constitutes about one-third of the approximately 18,000 acres of forest remaining essentially undisturbed in four States. The tract lies astride the creek, a tributary of the Allegheny River, in the center, although not a part of, the Allegheny National Forest. A mile or two below the point where we had crossed the stream the original timber still stands in the narrow valley, and brown trout of fabulous size lurk in deep pools overshadowed for centuries past by hemlock and birch. The native trout, alas, have not withstood the warming of the water caused by its exposure to full sunlight in several miles of the upper reaches of the Tionesta valley, just described. In fact, the original peace and beauty of undisturbed natural conditions departed from the main valley with the building of a logging railroad up it in 1929, and a third of the virgin timber, including the only white pine, is now hopelessly beset by the lumberman and his works. But on the head of two tributaries—Cherry Run and the twin branches of Fork Run — man has scarcely set his mark. Entering the forest here, we were immediately conscious of a difference in the very atmosphere. The wind that had been nipping ears and fingers in the cut-over land moved less freely through the dense thickets of witch hobble and of tree seedlings, and the result was greater warmth in spite of the shade.

Evidence exists in this old hemlock stump, on the area cut over in 1929, that Tionesta Forest was part of the virgin green mantle that covered America prior to the coming of Columbus and the advent of the white man. For a count by forestry students of Pennsylvania State College found that it carried 560 annual rings.

And shade it was. Here, sometimes over as much as five or ten continuous acres, we felt as though we stood in a gigantic hall, pillared by magnificent hemlock trunks, roofed by canopy above canopy of dark green hemlock needles, and carpeted by five centuries' fall of the same rich fabric, no longer green, but brown. In such spots not a few but nearly all the trees were over two feet in diameter, scores were above three feet, and now and then we measured one exceeding four feet. Log lengths ran to five quite commonly, sometimes to six, in trees with total heights up to 125 feet. I have yet to take a forester or a botanist into Tionesta who has seen Eastern hemlock to equal this. To lumbermen it will be enough to say that measured acres have been competently estimated to yield 50,000 board feet.

But the hemlock in Tionesta is not all, although it forms nearly a pure stand in such places as just described, and over the tract as a whole makes up probably two-thirds of the tree volume. Interspersed through these dark hemlock woods—now nearly the sole remnant of that "Black Forest" for which Pennsylvania was famous in the days when she stood first among all the States in lumber production—are mixed growths of hemlock and hardwoods, and sometimes patches of pure hardwoods. The hardwoods are principally beech, the best with clean boles of such dizzy height and exquisite proportions that I have since speculated whether the pillars of the first Greek temple were not conceived in the mind of some beauty-loving Hellene standing spellbound, high on Pelion or Ossa, in a grove of ancient beeches.

As for sugar maple, a timber cruiser whose keen eye and unerring judgment have served the Forest Service from California to Maine, and from Louisiana to Minnesota, told me that day that he had found "the biggest sugar maple tree in the United States" growing at the head of Cherry Run. My own contribution to the day's list of big trees included a red maple a trifle under 50 inches in diameter at breast height, and a black cherry only three or four inches smaller. All of these were well over 100 feet tall, and may have been 120 feet. Yellow and black birches rank next to the beech and maples in abundance, and among the rarer species are white ash, basswood, tulip poplar, and cucumber magnolia, the latter two typically southern species, although growing here in close association with northern species at an altitude of 2,000 feet.

Not every tree in Tionesta is a giant, of course. All ages are here present, from this year's seedlings up to contemporaries of William Penn, and even of Columbus. The forestry students of Pennsylvania State College found a hemlock stump with 560 annual rings on it, in the part of Tionesta cut over in 1929. Trees doubtless fully as old are still standing. Moreover, from time to time catastrophe has overtaken parts of the area, and thinned or even completely wiped out the ancient wood. The swath cut by a hurricane 110 years ago along Fork Run may be traced by the dense stand of relatively slender cherries and ashes, species that promptly take possession of blow-downs in

these Allegheny Mountains. And laid nearly across the Tionesta tract from east to west is the scar of a fire following a similar blowdown about fifty-five years ago. Practically every tree above that age is wounded, and over many acres not a veteran remains.

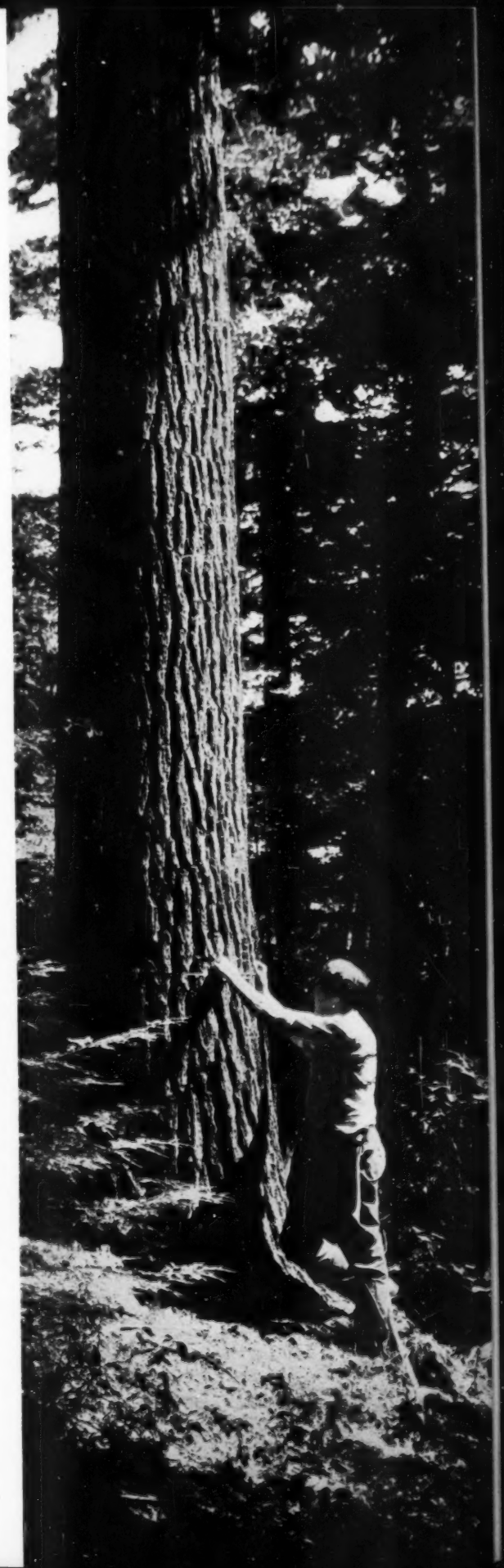
As a spectacle the virgin forest of Tionesta Creek is something to live in the memory always. A day's walk in its depths will chasten the most blatant ego, and hearten and soothe the weariest spirit. As a hunting ground I dare not describe it, lest my reader take advantage of my indiscretion. Partridge, rabbit, deer, bear had left more tracks in that first snow than I have ever seen in an equal area in the East. And as a museum piece, a sample of the superb forest resource with which our Eastern continent was once endowed, it might yet sober a generation that in the West at least still draws lavishly on forest wealth it had no hand in creating. As all of these things Tionesta Forest has a value so far beyond that which may be derived from its conversion into lumber, tan bark, and chemical wood that it is unutterably tragic to think of its passing.

But there is a value in this tiny remnant of original growth, this one out of a thousand acres, which we believe transcends all the other values combined—its value for scientific study.

European foresters long ago discovered what Americans are only now beginning to realize: that a virgin wood is a treasure house of information as to Nature's ways, a priceless record of the slow but inexorable processes by which she moulds every forest and its teeming fauna to fit soil and climate. No system of silviculture, no manipulation of the forest to yield abundantly some product or service useful to mankind, can long run counter to natural tendencies or processes. For a few years—fifty perhaps, or a hundred—we may order the forest according to our own ideas, but eventually Nature will have her own way. In our management of the forests of the future we must understand, and in the essentials follow, Nature's way.

I know no better example of the persistence of natural forces in the face of human interference than recent developments in the old-field stands of white pine in central Massachusetts. Two hundred and fifty years ago the early settlers in the Swift River valley cleared away the virgin stands of hardwoods, with here and there a white pine, to make pastures or "mowing" for their sheep and cattle. Doggedly they grubbed out of narrow valleys every vestige of the original tree growth, and year after year joined stubborn battle with the pine and grey birch seedlings that, sprung from wind-borne seed, skirmished from the adjacent woodlots. Then came sterner warfare, and when Father Abraham called, men marched away to bloodier fields. The autumn winds of the '60's showered their pastures with pine seed, and by the time they returned—some never did—pine seedlings formed unbroken thickets between crumbling fences. There for fifty or sixty years pine reigned supreme.

Then a strange thing happened. Encouraged by the thinning of the pine crowns that takes place in most white pine stands at about this age, not pine, but *hardwood*, seedlings began to appear here and there beneath the pines. They were not only ashes and maples, light seeded species, but also oaks and hickories, the heavy seed of which were carried into the pine woods from adjacent forests in the jaws of squirrel, chipmunk, or mouse, or in the beaks of jays and other large birds. Neither birds nor animals, we may be sure, had anything in mind but their own winter food supply when they transported these nuts, and they allowed only a small percentage to germinate. But a few seedlings developing year after year for the past decade or two now form an understory of young hardwoods beneath the pines, and will some day surely dominate the forest. Then will the cycle be complete. Centuries before men, red or white, claimed this ground, hardwoods and pines had struggled to dominate it. And the hardwoods, somehow better able to take advantage of the comparatively heavy soils of the valleys, won the long battle with the pines. Then came the Puritans. They banished both contestants from the field for two hundred years. Seventy-five years ago the losers returned. Eventually, after three hundred years of exile, the oaks, hickories, ashes, and maples will once more be victors over the pines.



One of the rare white pines in the virgin Forest of Tionesta. Such giants make a trip or even a day's walk in the depths of this woodland inspiring, and a memory to live in the heart forever.

Forces that may not be denied, equally persistent with those which brought even heavy-seeded hardwoods back to the old fields in central Massachusetts, are operative in every forest in the world. They produced the virgin forest. Given time enough, they will restore its counterpart. The best silviculture may modify the details, it cannot permanently change the essentials, of Nature's pattern.

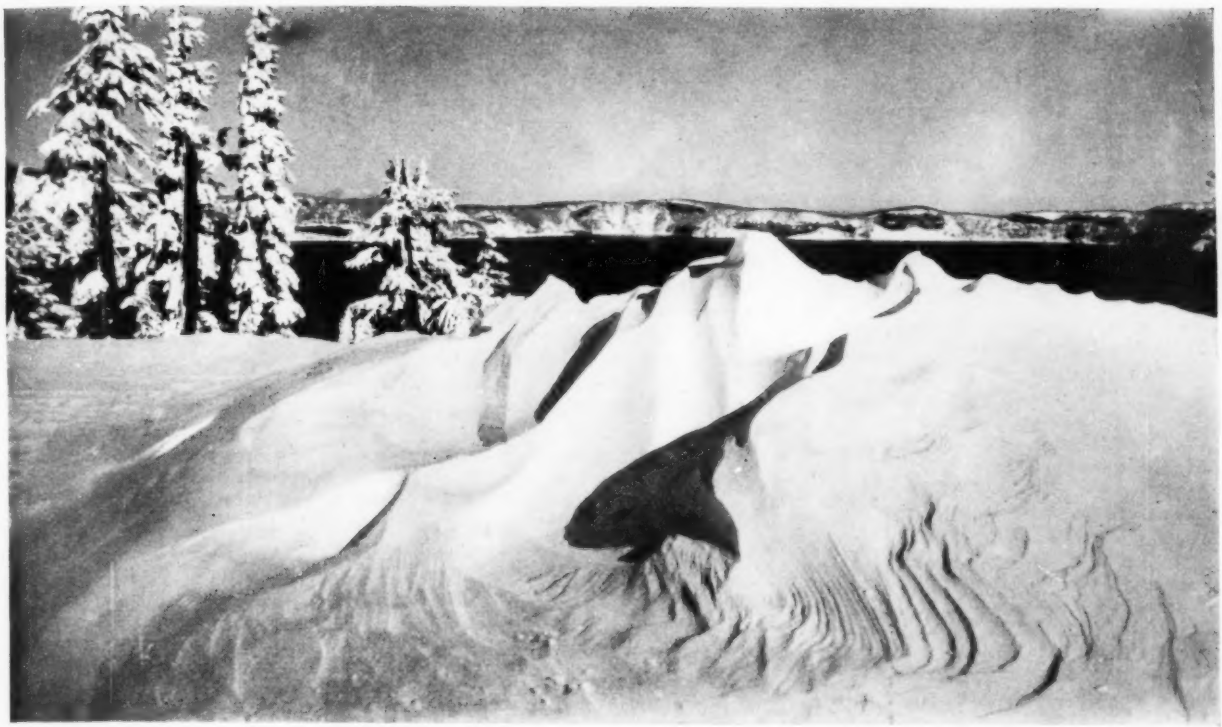
Every virgin forest records—in a language not too difficult to read, if we make the first great step of recognizing that it is worth reading — the conditions which favored the reproduction of each species present on that soil and in that climate; the circumstances which enable one species to dominate or at least survive in its struggle with other species; and the influences which the forest or its several components exert upon the soil. Some forest soils of Saxony, we are told, have deteriorated alarmingly under a system of silviculture which ignored the original mixture of softwoods and hardwoods, and which attempted to grow softwoods exclusively, just because they were of faster growth or produced more salable wood. A study of the primeval forests, and of the long-term effect of their different species on the soil beneath, might have saved the Saxon foresters who were responsible a blunder that has taken a century or more to become evident.

Fifty-one inches in diameter, this tulip poplar is a monarch meanly slain, victim of the lowly porcupine. With their natural enemies, the cougar and bob-cat, exterminated or fast disappearing, porcupines fear only man.

Already there has been committed in our own forests, without much protest from American foresters, a blunder which may prove fully as serious as this European one. Blandly ignoring the lesson which our virgin forests might have taught us concerning the delicate balance between all forms of life, we have ruthlessly hunted and even exterminated predatory animals and birds which alone through the centuries have protected the forest against a horde of potential destroyers. In some parts of Pennsylvania deer, undisturbed by cougar and bob-cat, and very inadequately hunted by man, have multiplied alarmingly; they have devoured every green thing within their reach, including the young trees that must some day replace the old if the forest is to survive. What further calamities we invited when we put bounties on the big cats, and on lesser predators such as foxes, hawks, and owls, we are only beginning to guess as we find porcupine damage increasing; seed crops of such large-seeded species as the oaks almost completely destroyed year after year; and tree seedlings stunted or killed by swarming rabbits and hares. We need authentic information on the system of checks and balances which Nature, if left alone, imposes on the creatures of the woods; nowhere can it be obtained as well as in the precious remnants of our primeval forest.

The Thousandth Acre on Tionesta Creek will repay the most detailed study. On 999 acres out of 1,000 in the Allegheny Station's territory Nature's record has been obscured, often hopelessly so, by the heavy hand of man and the Promethean fire. Research foresters have no desire to study virgin timber as they study second growth—by cutting it experimentally and observing the results. In common with botanists, zoologists, and students of soils, we wish to study this and other virgin timber tracts just as they are; to read the record of what has happened over the centuries, as the surest guide to what will happen again in the future. In Tionesta we want to learn, for example, whether the hemlock and the various hardwoods can be made to succeed themselves, or whether, as we already suspect, there must be a measure of alternation in their occurrence. We want to discover the conditions under which we may reproduce the magnificent b l a c k cherry and bring it to maturity unmarred by the inferiority of form that is often evident in second-growth stands. We want to know how to encourage the valuable sugar maple, which is here much less a b u n d a n t than in the northern hardwood forest generally. Having learned what are the forces at work, and how they operate, in the Thousandth Acre, we may then apply our knowledge to the management, for timber production, watershed protection, or recreation, of the second-growth forests that we hope will some day cover all of the other nine hundred and ninety-nine acres.

Editor's Note. Recognizing the imperative need for prompt action to preserve virgin timber areas for study and inspiration, the United States Forest Service is systematically setting aside from other use so-called "Natural Areas" and "Primitive Areas" within the western National Forests. But in the East the land so far purchased for such forests bears almost no virgin growth. Precedent for buying limited areas of primeval forest for scientific study is contained in the following statement, in 1929, by the National Forest Reservation Commission justifying purchase of "Heart's Content"—101 acres of virgin white pine forest in Pennsylvania: "It is deemed eminently desirable that the Government should acquire this property, not as a museum site or as a recreational tract but as a laboratory for the promotion of silviculture within which to study the changes which take place in such forests.



Cobalt blue, the body of the Lake lies cupped in striking contrast to the glittering winter landscape—a picture without peer.

CRATER LAKE IN WINTER

By DAVID H. CANFIELD

IT IS winter again in Crater Lake National Park, and we who are stationed here on patrol and other duty experience a feeling of peace and freedom. In the spring we will be impatient to put our feet on solid ground once more, but the fluffy snowflakes, looking as big as pancakes, and closing all roads to visitors, invariably bring joy to our hearts. We welcome the solitude and change of work that come, just as in the summer we welcome the thousands of visitors and the job of preparing for them.

The majestic beauty of the park in winter is something that only a few can know at the present time. Although rotary plows keep twenty-four miles of highway at the higher elevations cleared, the lower ends of the roads are untouched and consequently blocked. Park officials feel that it is imperative that the touring public be kept out during the winter, due, chiefly, to storms which come with alarming suddenness and intensity. If inexperienced visitors were allowed to enter, particularly with the present winter equipment and personnel, tragedies would be difficult to prevent. Even those of us who know what to expect and have some measure of wisdom as to how to meet it, have more trouble than we care to recall.

A patrol trip with the rangers is not soon forgotten. This stop-over at the North entrance ranger station revealed only the top of the two-story structure, completely covered by heavy drifts.

Because of the necessity for experience, and because one must be temperamentally suited for the rigors of the snow trail and confinement alike, our crew is carefully selected, for one laggard, thin-skinned, or impulsive individual will quickly ruin the harmony so essential to such a life. "Cabin fever," that strange malady of human nature that appears when a few people are grouped together for long periods under ad-

There's "moonlight on the Lake."

snow are a never-ending delight; the fantastical curves and snow masses of the smaller trees cause one to marvel at the artistry of nature. The weird drifts offer mute testimony to the force and vagaries of the wind.

Then there is friendship—an unlooked-for friendship—with bears, squirrels and birds as they wait patiently around the kitchen door long after they should have gone elsewhere for the winter.

When the first good storm came this fall bears we had not seen for many months found their way to our kitchen door. Several alert mothers showed up with cubs. Evidently snow had reminded them of hibernation but they thought it a good hunch to go by the mess hall en route. The food apparently was excellent, for many of them decided to postpone this going-to-bed process. For a month or so twelve played around enjoying table scraps to the utmost.

One little fellow loved to wrestle. He would tackle one of the larger bears—he had to, the younger ones thought he was too tough—and the bout would be on. Over and over they would go, and then under. They would separate, stand up and box until one or the other fell, then the contest would change to wrestling once more. Finally the larger one would tire and an extra hard nip would put the young playboy in his place. But only for the moment. The little rowdy would amble over to some drowsily comfortable bear and make a couple of exploratory passes at him. If the individual seemed in sufficiently good humor he would pounce on him and away they would go. And this procedure lasted from dawn to dark.

Gradually they would get around to finding a good place to bed down, but not until January had deposited over seven feet of snow on the ground. A few days ago it was snowing and the last of them, a hardy fellow, had not shown up for his breakfast. Blackie, the bull cook, who knows all the bears for several generations, thought he had gone into hibernation. Later in the day, however, we discovered him in a fir tree about fifty yards away. He was spraddled out on a big limb waiting out the storm, two legs hanging off into space. Sure enough, when the storm abated next morning, he came at Blackie's call, half swimming through the fluffy snow. He will go to bed eventually but he and his comrades will be back in the spring when there is still ten feet of snow on the ground—weeks before they could possibly forage for themselves.

And speaking of bears, some of the boys last spring got an idea for an interesting picture. They wanted a bear at the top of a tree, and lanky Slim was urged to chase one up there. After some coaxing he set out and soon had a large fellow twenty feet up a good-sized fir. At this juncture someone tried to scare another bear up a tree nearby. But this bruin had his own ideas and scurried up the same tree Slim and the other bear were in. Can we ever forget that look on Slim's face? His instant decision was

verse conditions, must be avoided.

As it is, we have a great bunch on the winter job at the Lake. There are rangers to look after the welfare of park interests, a patrol to protect wild life in general, to guard against trespassing hunters and trappers in particular. The numerous buildings must be cleared when tremendous snow loads bring about undue strain. Telephone lines must be kept working. All told, the government's large investment must be protected.

But getting back to the beauty of the park in winter, it is, in many respects, unequalled. The crowning spectacle, of course, is Crater Lake with its indescribable blue nestling in a circle of high white-robed cliffs. The heavily burdened conifers with their magnificent mantles of

With few exceptions, the roads must be closed to visitors because of the potential tragedy of the sudden and intense storms that are inevitable.

that his particular tree was getting darned crowded. With a big shove and kick he jumped, burying himself in the snow up to his chest. And did he do some threshing! The rest of us were laughing so hard that we were helpless to aid him out of a predicament he didn't fully appreciate.

I came upstairs one evening last spring to find the boys on the second floor feeding a bear in their bedroom. The snow was so deep that he walked right in when they opened the window. In another building we have a golden mantled ground squirrel which comes out of his bed half groggy and shivering every time we build a fire in the stove. He is not very peppy at first, but after he has huddled up to the fire for a while he gets right friendly and seems to think we are pretty good fellows even though we did wake him up a bit early.

As none of our gang had been around St. Moritz or similar points, we all had to learn to ski. And skiing, when opportunity permits—and if I must admit it, sometimes we make the opportunity—affords endless amusement and laughs for the bunch.

Needless to say, every laughable incident has a victim who generally fails to see the funny side. It is this way, the bindings hold the ski firmly on the shoe and there is no getting loose when you begin to spill. This, as you may imagine, makes for all manner of complicated tangles and positions. The graceful and efficient way to fall is sideways and backwards, but oftentimes a fellow doesn't know it far enough ahead to plan, or perhaps he is just a "diehard" anyway. Last year I was skiing down a slope with a straight stem pipe in my face. Something happened and I described a beautiful arc, geometrically speaking, head first into the fluffy mass. When I finally got up to air again I missed my pipe. Not feeling any undue abrasions in my throat, I assumed it was in the snow. The boys, between laughs, helped me search, but we never found it. I shall always think it was because we only dug down about three feet!

The other day two of the boys, not inclined to wait for good skiing snow, put out. It was so soft that a person walking would sink well above the waistline. They were successful until the expert Happy decided to try a longer slide. He was going fine when that something happened. Following a momentary helter-skelter of ski poles, arms and legs, there was absolutely nothing of him to be seen. Finally a head appeared gasping for breath. He couldn't get up in the soft snow, so he yelled for Frank to come and help. But he, adding insult to injury, would give no aid other than some bright wise-cracks until he had taken two pictures. Then he offered Happy one end of a ski pole to hang onto while he pulled. The first effort was to no avail, so he relaxed to get a better hold. Just as he tightened for the pull Happy let go to renew his grip. Wow! The pole smacked Frank on the head and down he went. They had a lovely time!

Shrouded hemlocks gleam in beauty.

Buried in the arms of winter, this summer home on the Government camp has settled down for a long winter's sleep—April finds little change in the picture.

Another time two of the boys were doing some cross country work on patrol. It was necessary to cross a deep gully in which ran a small stream. The natural bridge of snow across the water terminated abruptly at one end, and as one of the boys came obliquely across the canyon that inexplicable something happened. He came to a final rest with either end of his skies caught in the snow banks on the swo sides of the creek. His body had swung over and down so that he was hanging head down with his feet securely held in the skiis. When he tried to extricate himself he had to put his arms in the icy stream up to his elbows. However, his partner aided him, this time before taking a photograph.

When the snow barriers are knocked out of the lower ends of the highway about April 1,

marking the beginning of a new travel season, the drive into the park and up to the lake rim is one of constant thrill to visitors. The sheer snow walls on either side of the road will be from six to eight feet at the park entrances, to twenty feet or more at the lake rim. The road is amply wide for two cars and the pavement dry, making the trip somewhat like driving down a fourteen mile long hallway that has no ceiling. At the rim parking area we shovel stairs in the snow so that visitors may gain access to the top and the lake.

Rangers have plenty of worries during the early spring months. Huge drifts overhang the rim as much as forty feet, and the spring sun has these massive accumulations ready to break loose without warning, catapulting their tons of snow amid a tremendous roar to the blue waters a thousand feet below. And the job is to prevent people from venturing out on these treacherous overhangs "to get a better look."

A patrol trip with rangers is a thing to be remembered. The ever-changing panorama of the lake as it is seen at intervals, the fantastic drifts one encounters, and the play of shadows on the snow as the sun makes its daily run are truly spectacles. The stop-over cabins are nearly buried. In some cases only the peak of the roof is showing, necessitating digging for several feet to gain access through an upstairs window. In anticipation of this situation a shovel is always cached high in a tree near the cabins.

The weight and force of the settling snow mass is often amazing in its effects. A table erroneously left out in the fall will have its two protruding sides broken off flush with the legs; wooden signs are torn from the posts; a two by four ridge pole of a summer tent house will be broken. Any pail or container left lying on its side will be crushed flat, and it has even been known to break the faucets off of water standpipes.

An incident of last spring was amusing to me and also presents a striking example of how the great snow depth changes the looks of things. There are twenty-two housekeeping cabins, one room affairs, at the rim concentration area. When spring had come the lodge caretaker decided he had better cut away the snow load from the roofs to avoid the buildings being crushed as the snow settled. They had long since ceased to be even a bump in the snow, so with a rod he plumbed their location. But the best he could do was to find seventeen! He had to cut down five feet of snow at least to bare the roof gables. I might add, to keep the owner from worrying, that the other five cabins were found safe and sound later on.

Sharing with the evening's cards and books in winter's pleasures come the tale-swapping sessions. There is something about sitting comfortably around a hot stove or flopped on a bed after a big, hot supper, that provokes tales of experiences, especially after the tobacco is burning smoothly in your pipe. Not any two of the boys hail from the same part of the country. No two have lived the same kind of lives previous to their being bunched together here. What stories! What tense interest!

Outside the snow piles up.

TRAIL RIDERS TO EXPLORE MONTANA WILDERNESS IN JULY

TWO exploration trips, one of eleven days and one of nine days, will be made by the Trail Riders of the National Forests in July. The first party will leave Missoula, Montana, on the morning of July 9, returning to Missoula July 20. The second party will leave Missoula on July 19, returning July 28.

The proposed trip into the Gila Wilderness of New Mexico, announced in the January issue of AMERICAN FORESTS, will be presented in a later issue.

The eleven day trip scheduled for this summer will take the Trail Riders into the wildest regions of two of the nation's greatest forest wilderness areas, the South Fork Wilderness of the Flathead National Forest and the Sun River Wilderness of the Lewis and Clark National Forest. The shorter trip of nine days will carry the riders into the rugged high country of the South Fork Wilderness. Although both of these wilderness areas were explored by the Trail Riders in 1933, new routes have been selected and new country will be penetrated. Very little of the trail ridden in 1933 will be repeated.

The first trip will take the riders across the Continental Divide near the famous Twin Peaks of the main range of the Rocky Mountains, will penetrate to the Chinese Wall, a great rock formation on the east side of the Divide, will cross into the Spotted Bear Game Preserve, and traverse the picturesque trail along Big Salmon Lake to Holland and Lindbergh Lakes. The second and shorter trip will follow the South Fork of the Flathead River to Big Salmon Lake through some of the most spectacular wilderness country in North America, returning by way of Holland Lake.

The two trips have been synchronized so that both may be made without loss of time and at minimum expense. That is, riders leaving Missoula with the first party may join the second party at Holland Lake, returning to Missoula by July 28. This will make possible a twenty-day trip.

As in 1933, the trips will be made under the direction of The American Forestry Association, with the cooperation of the United States Forest Service and other agencies. Forest rangers will ride with the parties, which will be organized to include expert guides, wranglers and packers. Only tried and trusted mountain trail horses will be used, insuring safety and comfort. Inasmuch as the trail rides of the National Forests are primarily of an educational nature, costs of the trips will be based on actual expenses.

These costs, together with detailed plans for both trips, will be announced in a later issue of AMERICAN FORESTS. Those interested should write to The American Forestry Association, Washington, D. C.

LUMBER AND THE NEW DEAL HOME

How Recent Developments in Building Cheaper and Better Homes with Wood are Keeping Step with the Times

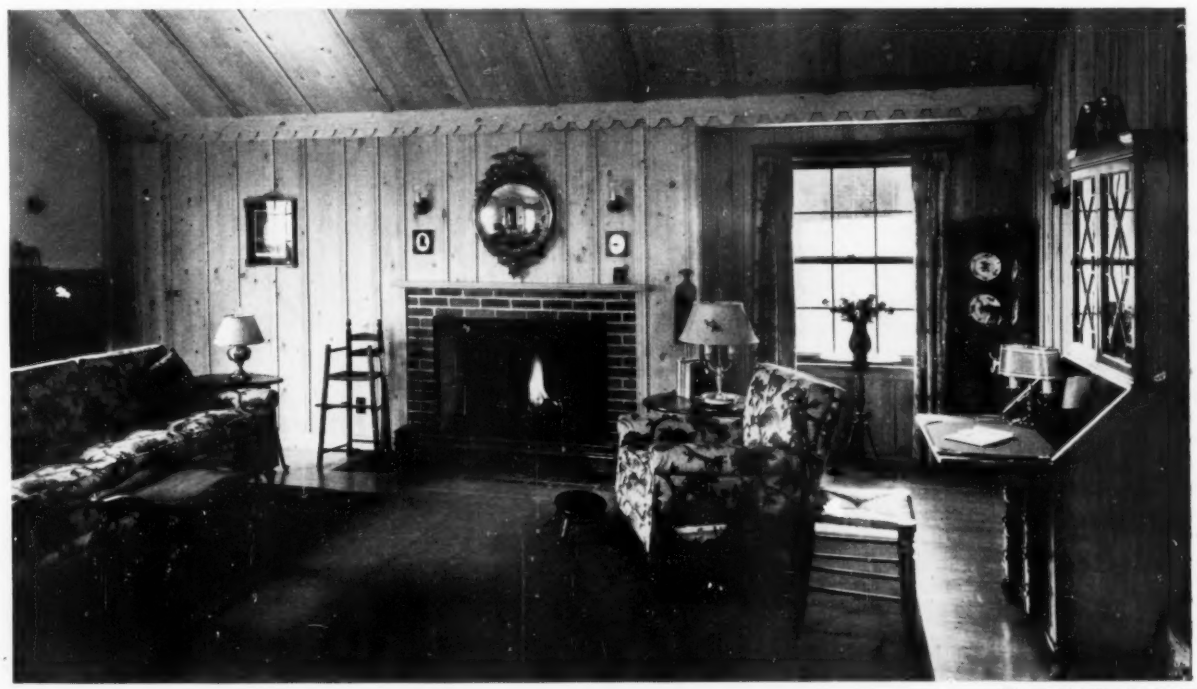
By FRANK P. CARTWRIGHT

IN A recent series of articles published in the press, Dr. O. M. W. Sprague, lately international exchange adviser to President Roosevelt and the Treasury Department, lays special stress upon the possibilities of low cost residential building, properly managed and directed, as an influencing factor in reviving business and helping to overcome the depression. That a potential demand exists for better housing for the majority of families with incomes of $2,000 and less, he asserts, is hardly open to question. "One more room for every family in the United States below the income level of $2,000" is a slogan or objective proposed by Dr. Sprague. This is by no means an impracticable objective, he says, if building costs can be reduced.

In the days of lush prosperity between 1922 and 1930, this nation was wont to build some five billion dollars' worth of residences yearly. Every heavy industry—every maker of producers' goods—in the land was watered by that business. Nothing is more responsible for unemployment and the continuation of the depression than the cessation of residence building. Perhaps the country is overbuilt on great apartment houses, but it is certainly underbuilt on detached low cost residences. It is waiting, in wretched housing congestion, for finance and business security to start the ball rolling. Both because they are particularly needed and because of the new objectives of industrial and population dispersion, the demand for separate residences should be greater than ever before.

Furthermore, a great housing program means not only prosperity for people but also prosperity for forests. The Lumber Code under the NIRA virtually decrees the perpetuation of commercial forests and, significantly, it permits the cost of forest maintenance to be included among the items of manufacturing cost. Recognition is thus made of the fact that tree growing is a business like any other. A revival of home building will make the now planned and judiciously directed lumber industry profitable, free from the fierce pressure of the balance sheet on forest depletion and able and willing to enter enthusiastically into administration of its 250 million acres of forest land as an always yielding but never exhausted resource of raw materials.

What are the forest products industries doing to produce improved and lower cost homes and thus meet the needs of



Photograph by Frank P. Miller

The charming effect of the all-wood interior, illustrating "built-dry" housing. The striking use of knotty West Coast hemlock panels—floors, walls and ceiling all of wood—is definitely felt in this living room. There is no plaster to crack or to bring in moisture.

By Curtesy of Curtis Bros.

Just one of many designs that have brought the small home into step with the times. Economy, dignity and modern conveniences are all typified. With either shingle, or siding exterior, this home can be built today for under $5000.

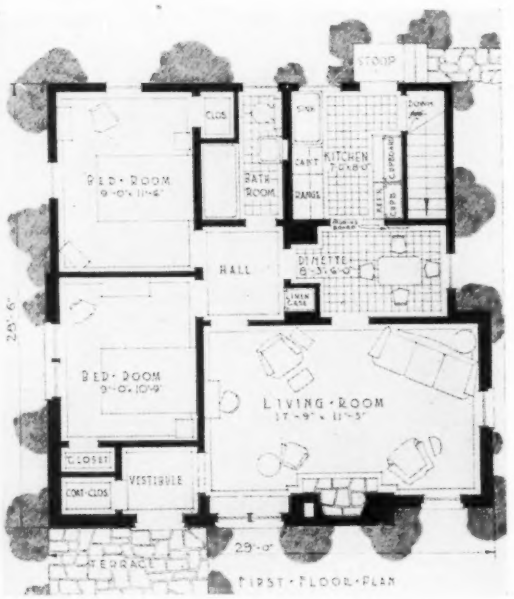
the "new deal" social order? The small modern detached house of low cost has always been of lumber but those who visited the Century of Progress Exposition in Chicago and witnessed the display of small homes demonstrating modern developments in the use of steel, concrete, brick, aluminum and even glass know that a new era of competition is ahead in the field of small house construction. The forest industries have been alert to this new competition and to the great opportunities open to them in a housing program to revive prosperity. A vast amount of practical thought and development work is being applied to bring the wood house into step with the times, and quite a few forward-looking business men are beginning to put new ideas into effect. Progress is being made, not with a brass band and a house or two, but with patient experimentation and by constantly checking new departures against the exacting service standards of the wood house as it has been built and used for many generations. It is noteworthy that the leaders are among those firms which for many years have been outstanding in the lumber industry.

Improvements and economies in wood houses are of several types. Much attention is being paid to refinement or pre-fabrication of the lumber before it leaves the mill. New products are being developed and familiar products applied to new purposes. The sectional house, built in parts at the factory and shipped to the site for quick erection, is a practical accomplishment, available commercially. Finally, and perhaps this in the long run is most important, a striking change is being brought about in the interior finish of wood houses.

Boards and framing lumber used to build houses must usually be measured and cut to exact lengths and the rough ends neatly squared. In the past this has been done by hand work on the job. One large lumber company now sells framing lumber marked in feet and inches to facilitate measurement. The same company supplies most items needed in house construction accurately squared at both ends so that the carpenter needs to saw off only one end at most. The better grades, used for finish and trim, are packaged in neat bundles of uniform length.

Another large producer has in commercial distribution a novel type of building lumber which carries mill fabrication still farther. Framing lumber for the horizontal sills and plates at the base and top of the walls is grooved at sixteen-inch intervals. The vertical studs are cut to required length and the ends are formed to fit and lock into the grooves in sill and plate. Sheathing lumber is available cut to length to fit the studs without waste, and even the wood lath come in panels of six, nailed to cross pieces. This system is not in the ordinary sense ready - cut lumber, which is designed for a particular house plan, but can be used for many types of lumber buildings.

The painter as well as the carpenter is



finding his work much simplified. Several lumber manufacturers now have in commercial distribution lumber for siding and exterior trim which has been coated before it leaves the mill with aluminum paint. It is well known that aluminum paint used as a primer or first coat greatly increases the durability of ordinary paints applied over it. The factory coated lumber not only reduces painting costs on the job but also defers repainting for a number of years.

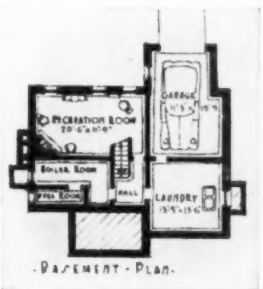
More and more lumber is being thoroughly dried or seasoned in kilns before shipment to the job, so that it will not shrink after it is placed in the building. It has long been recognized that more uniform and dependable seasoning is attained in dry kilns than by the natural process of air seasoning, but only with a slackening in the building demand has improvement in this respect come about.

The sectional house, as a solution to low cost housing requirements, has received much attention in

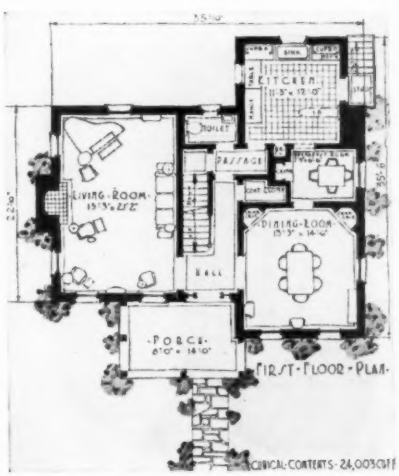
the last two or three years. The idea of applying mass production methods to houses and of making them up like furniture or millwork is a fascinating one. It is safe to say there are not less than fifty concerns of all sizes in various parts of the country working out the possibilities. Several have houses of one type or another in production. A leading lumber company has placed on the market a line of such houses which are available through the ordinary retail channels. Fifty sectional wood houses have been purchased for the first subsistence homestead project of the Federal Government at Ridgeville, West Virginia.

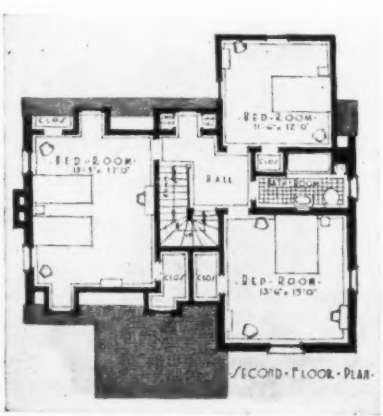
By Curtesy of Curtis Bros.

Not so small, but a small house nevertheless and one which combines economy of construction with inviting beauty and well arranged interior. It can be built today for approximately $10,000, depending on locality.



Where there is a sufficient market, either through planned housing developments or in large metropolitan areas, there seems no doubt that sectional house construction will steadily increase. Such a development, however, especially under current conditions, presents dangers as well as advantages. Proponents of mass house construction at central points in the fashion automobiles are produced, forget that the latter was an added industry. The tremendous activity and growth stimulated in a few cities did not subtract proportionately from business and labor opportunity elsewhere. Centralized house production, such as proposed in some quarters, in the measure that it proves successful, will still further demoralize and disorganize local business and deprive building tradesmen of the opportunity to practice their crafts. The best methods and type of sectional house construction undoubtedly will be those that for the present at least can be carried on locally. For houses to be built in place, more attention is being given to floor types that save space. Plank under-floors, over exposed beams six to eight feet apart, eventually will take the place in many houses of the present one-inch under floor over deep joists, finished below with plaster. An ingenious method has been developed for laying the finish floor over such plank under-floors with a layer of fibrous material between for heat and sound insulation. A floor unusually resilient under foot is secured by this means. For greater spans laminated construction such as used in textile mills is feasible and very little more expensive than familiar joisted construction. Such floors present much greater resistance than the joisted type to fire penetration from one story to another, and therefore are particularly desirable for first floors over basements.





The most important recent development in frame dwelling construction consists in the use of sawn lumber, plywood, or other forest products for all interior ceiling and wall finish instead of plaster. It has aptly been termed "building dry" since it avoids the introduction into the house during construction of a large amount of water, necessary for mixing plaster. The "build dry" idea was exemplified by the wood house on display at the Century of Progress Exposition in Chicago during the last summer. For years it has been recognized that plaster, as a form of interior finish for frame buildings, is by no means satisfactory, and it is surprising that the present change has not come about long ago.

Building dry avoids introduction during construction of several hundred gallons of water. It is of little avail to specify and use dry lumber and (*Continuing on page* 92)

HALTING EROSION

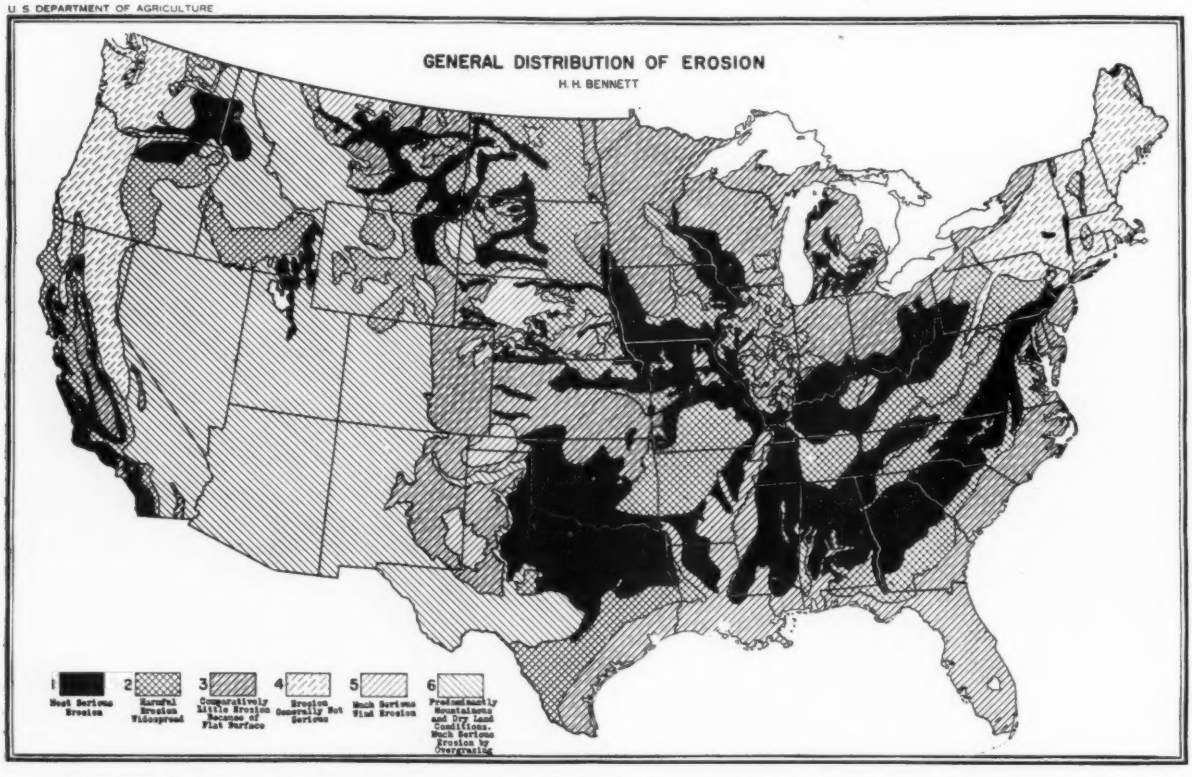
The New Program for the Control of Soil Erosion Coordinates All Essential Factors in Attacking this National Enemy

By H. H. BENNETT

THE Soil Erosion Service, a new federal branch of the Interior Department, operating with a $10,000,000 allotment from the Public Works Administration, is proceeding with the field work of controlling soil erosion on a number of large representative demonstrational areas scattered throughout the nation.

Briefly, its program calls for control of erosion, reduction of the flood hazard, protection of rich bottom lands from over-deposits of worthless sand and gravel washed out of the hills, prevention of silting of stream channels and reservoirs, and effecting all necessary readjustment in land-use practices to fit the requirements of an economically sound farm enterprise. The plan will reach every person having an interest in or love for the welfare of the land—the preservation of the most indispensable asset of the nation, the basis of all plant life. The demonstrational areas range in size from 100,000 acres to 13,000,000 acres. The working areas thus far selected lie in the Piedmont Plateau of South Carolina; the Black Belt of central Texas; the Palouse wheat belt of Washington and Idaho; the unglaciated region of southwestern Wisconsin; the Tennessee Valley with areas in Tennessee, North Carolina and Alabama; the corn belt of north-central Missouri and south-central Iowa; central Illinois; north-central Kansas, with probably an associated area in Nebraska; and the Red Plains of central Oklahoma, with the Navajo Indian Reservation project of 13,000,000 acres covering large areas in Arizona, New Mexico and Utah.

On these watersheds every practical measure for controlling erosion is to be used, according to the adaptability



This graphic picture of erosion's invasion of the soils of the United States shows its far-flung intrenchment and is the reason why the Federal Government has launched a broad program of attack through a newly organized Soil Erosion Service under the direction of H. H. Bennett, the author of this article. Control operations, as the author points out, will not be engineering projects or forestry projects or cropping projects alone but a combination of all three integrated with farm management based upon the erosive character of the soil.

of the many different kinds of land. Every acre will be treated in accordance with its particular needs. Steep, erosive slopes will be taken out of cultivation and planted to trees, grass, or other thick-growing crops, such as are known to be highly effective in stabilizing land against erosion. Part of the cultivated slopes will be protected with a new system of "strip cropping," under which the clean-tilled crops, as cotton, corn and tobacco, the real producers of erosion, will be grown on the level between parallel bands of grass and other dense crops planted across the fields. The purpose of these latter crops is to catch the rainwater flowing down the slopes, spread it out and cause the suspended soil to be deposited and much of the water to be absorbed by the ground. Thus the crops growing on the plowed strips below are protected and more of the rainfall for crop use is conserved.

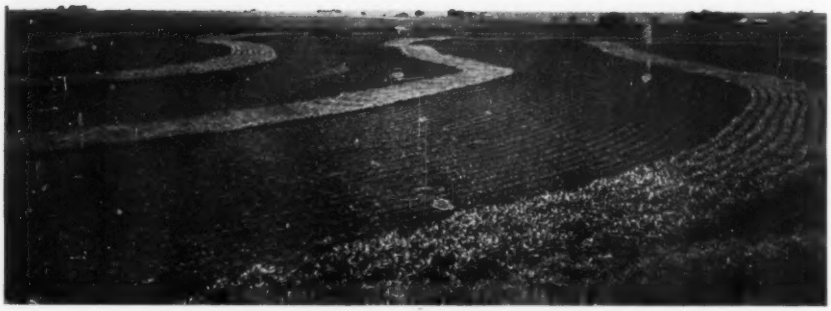
Field terraces are to be employed where the conditions are favorable, and in some localities the land will be scarified with a machine which scoops out 10,000 basin-like holes to the acre, each of which retains five gallons of rain, causing it to sink into the ground where it falls. Humus-supplying crop rotations will be practiced and cover crops and other control measures will be employed.

Here in the Tennessee Valley in the Clinch River watershed above the Norris Dam an attack on the enemy, at its source, is under way. The insidious work of gully erosion is being blocked by the building of check dams.

A great many people throughout the nation have unmistakably expressed their pleasure over the beginning of this work of undertaking to conserve and save the soil on our remaining acres of good land. Primarily, the projects will strike not at reclamation of worn-out land, but at the saving of what remains. It is recognized by erosion specialists familiar with the geographic details of the problem that much of the abandoned eroded land of the nation has passed beyond the possibility of practical reclamation for crop production. On these lost areas not much effort will be spent at present.

In those regions where none too much is known with respect to efficient methods of erosion control, some experimental work will have to be carried out before the fully rounded out demonstration programs can be pushed ahead. On the western grazing areas improved methods of range management will have to be integrated with the working plans, as a matter of course, and nurseries will be needed to produce adequate supplies of forage and erosion-control plants for seeding operations. Closest possible cooperation with Federal and state agricultural activities, the Geological Survey and other organizations will be sought in connection with every phase of the work. Operations will apply to complete watersheds, extending from the very crest of the ridges down across the slopes where floods originate, and on to the mouths of the streams. These will not be engineering projects or forestry projects or cropping projects, but a combination of all of these, operated conjointly with such reorganization of farm procedure as the character of the land calls for. In other words, well-rounded, coordinated plans will be followed, the details of which are to be based upon the best information in the possession of the scientific agriculturist, the forester, the range specialist, the soil expert, the engineer and the game specialist.

Consider by way of illustration a specific project — the Coon Creek watershed, near La Crosse, Wisconsin. It has been found that here it will be necessary to take out of use a large total area of steep timbered land now eroding because of excessive grazing. In order to stop the excessive runoff of rainwater from these areas, which has been speeding down across the cultivated slopes, ripping them to pieces and planing off the more fertile topsoil, these woodlands will be fenced and given complete protection. Grass will be restored to the protected forested areas, and where the trees are too thin other trees will be planted. Small seedings will be made of plants that furnish feed for quail and ruffed grouse. Below the forested land, the steep slopes now washing rapidly to a condition of low productivity will be taken out of the clean-tilled crops and planted with grass to furnish the grazing that formerly was provided by the timbered areas. This does not mean that reorganization of the farm layout is going to increase the grazing capacity of the farm unit, but it does mean that the crop area is to be cut down to some extent. Better protection of the cultivated land from erosion should, however, largely make up for the necessary reduction of the tillable area.



Erosion has been effectively controlled in the Black Belt of Texas by strip cropping in many of the cotton fields. Running strips of thick-growing sorghum are planted along the contours.

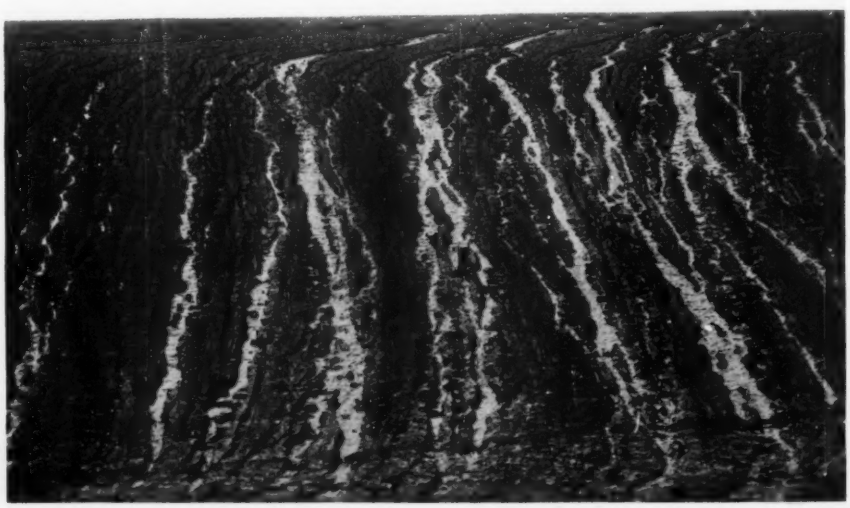
Thus far ninety per cent of the farmers of Coon Valley have expressed enthusiastic approval of the program. They have shown in no mistaken terms that they are going with the erosion control agency set up in the region by the new organization, a fact which the specialists of this branch of the Interior Department construe as meaning certain success for the national program.

The farmers of southwestern Wisconsin, where the first project is now under way, have recently awakened to the overwhelming destructiveness of unrestrained soil washing. Measurements made at the La Crosse station showed that during the past year seventy-seven tons of soil per acre were washed from land of about the average slope on which corn was grown. In addition, twenty-two per cent of all the rain that fell ran off the fields in the direction of the Mississippi River. Where bluegrass was grown the corresponding losses for the same period amounted to only six per cent of the rainfall and only six-one hundredths of one ton of soil an acre. This means that under corn the entire depth of topsoil, which represents the farmer's principal capital, would be washed away in thirty years; whereas, under bluegrass the time required to carry off the same depth of soil would be 370,000 years.

Similar results have come from the other erosion stations throughout the country, all showing that excessive washing is the principal cause of worn-out land and the sole cause of the devastation of 35,000,000 acres of formerly cultivated land in this country. They have shown also that vegetation is the most powerful agency for controlling erosion, and the only permanent means of control. It is felt that all of the projects to be undertaken are going to receive enthusiastic local approval. Even the Navajo Indians, in their latest tribal council, assembled in November this year, announced complete endorsement and support of the plans of the Soil Erosion Service for undertaking to restore vegetation over the sadly depleted, heavily eroded ranges of this largest of the Indian tribes.

The first thought of the erosion specialists in connection with this new work was to employ the funds on numerous small areas throughout the nation. When the President heard of this he pointed out that such a course would probably lead to the development of a large staff of technical experts, and the expenditure of much time and money in running from one small job to another, without anything very impressive being accomplished in the end. His suggestion was, in effect, that in the beginning it might be the better plan to concentrate upon large areas, preferably complete watersheds, and on them carry through impressive jobs of erosion control, spreading out later to other areas. This conception has met with general approval.

While there is an enormous area of land in the United States, it is by no means all good land. Most of the better soil is in cultivation and has been for some time. Much of this was only moderately productive the day it was cleared of its virgin forest or broken out of its sward of



This shows the result of a heavy rain which covered an area of 100 square miles in the famous Palouse wheat belt of Washington. The dark, rich soil in the summer-fallowed field was stripped off down to unproductive yellow clay sub-soil over nearly half of the field.

prairie grasses. Thousands of acres cultivated by the early settlers were so inherently poor that the common practice soon developed of using land as long as it would produce a fair crop, and then abandoning it for new clearings. As a matter of fact, this is still being done in some localities. In the Tennessee Valley I talked with farmers this year who were clearing land so precipitous it was difficult to climb, some of it having slopes in excess of seventy per cent. The farmers themselves admitted that such land, if used for corn or tobacco, as they proposed to use it, would lose all or most of its surface soil within three to eight years of cultivation.

In most localities there is abundant evidence of what happens; no one can argue to the contrary with the ribs of the earth protruding from countless erosion-scarred slopes. Until recently there was little concern about this problem of continuing depletion of the land. That a process of nature, rainwater running wild, has destroyed the equivalent of 140,000 farms of 250 acres each, for some strange reason, has impressed the nation as nothing to worry about. Sight has even been lost of the fact that all this violent chiseling away of the land would not have taken place had we not upset the normal order of things by doing away with nature's stabilizers—the trees and grasses and shrubs that were sown across the face of the earth to hold the soil in place. Nor has there been thought that after doing away with the plant cover, the rich topsoil, whose building required thousands of years, has been plowed up and laid bare to the wrath of the heavens. With plows and overgrazing the natural firmness of the ground has been destroyed. The pore spaces have been closed up and the surface layer made fragile and much less resistant to erosion. The hidden conduits of the soil, the passageways made by earthworms and insects and plant roots, have been effectively destroyed or sealed up, thus intercepting downward movement of rainwater.

In Stewart County, Georgia, where formerly fine crops of cotton and corn were grown, this gully, approximately 200 feet deep, was started by a drip from the roof of a barn. The chasm has now swallowed the barn, together with a schoolhouse, a graveyard with fifty graves, and a tenant house.

Not being able to penetrate the soil, an excess of rainwater has flown across cultivated slopes, picking up the surface particles to carry them away into the valleys and on to the oceans. Proceeding with every rain heavy enough to cause water to run downhill, the humus-charged, rich surface layer has been planed off down to stiff clay or to unconditioned, unproductive sand or rotten rock. In this way 125,000,000 acres of the land now in cultivation has lost all or the greater part of its topsoil. And the gouging effects have not stopped with this. It is at this stage

(*Continuing on page* 94)

In Wisconsin erosion has been controlled and run-off greatly reduced by strip-cropping. Thick, erosion-resistant crops are grown along the contours in strips between the erosion-producing crops—such as corn and potatoes. The steeper slopes have, very properly, been left in timber.

"WHAT THE C.C.C. HAS DONE FOR ME"

AMERICAN FORESTS here presents the second of a series of stories written by enrolled members of the Civilian Conservation Corps and selected as the prize winning contributions in the Magazine's recently concluded contest on the subject "What the Civilian Conservation Corps Has Done for Me." Limited to enrolled members of the Corps and to manuscripts of one thousand words or less, the contest brought hundreds of stories from the fifteen hundred camps which dot the country from coast to coast.

These stories form a remarkable narrative of human experiences and are unquestionably the best spoken evidence thus far available of the real value of the Civilian Conservation Corps to the youth of America and to the thousands of homes which they left for the "road" in search of work to help distressed parents.

The stories awarded fourth and fifth prizes are published in this issue. Brief biographical sketches of the authors are given on page 96. In the March number and following issues there will appear stories selected as meriting honorable mention. In accordance with the contest announcement, awards have been based upon the story and not its literary construction. All manuscripts, therefore, are being published as written and without editing.—*Editor.*

'IT HAS GIVEN ME A NICHE TO FILL'

By Lee G. Crutchfield, Jr.

Camp NP-2, Civilian Conservation Corps
YORKTOWN, VIRGINIA

Lee G. Crutchfield
Fourth Prize Winner

THE doors of the college closed behind me, and I went out into the world.

That was in June, 1932. We had no doubt, we graduates, in spite of the ominous events of the preceding two years, that work would be waiting for us, that industry would assimilate us in the same old way, that the old system wherein a college man could always find some sort of job would be in effect as it had been before.

June lengthened into July, July into August, August gave place to September. Strange—but there were no jobs. "Positions" were no longer sought after—but there were no jobs! Only tramping weary miles about city streets, mounting of stairs, hopeless interviews, offers to work for almost nothing, shrugs of shoulders, dismal refusals. The months blurred into a procession of failures, heartaches, disappointments. And suddenly I was afraid, insecure, confidence gone. It was winter.

To be unoccupied, to have idle time on your hands, so that you can think and think about the direness of the future—this is a terrible thing—to read the papers' doleful cry of mounting unemployment, gradually to think, "Well, what's the use?" and to start on the sloping road of mental self-pity that leads to carelessness, to indifference, to the loss of self-respect and pride, that leaves a numb, apathetic feeling of lost opportunity, wasted years, futility and fear—this is indeed an awful thing.

Somehow I got through the winter, though it nearly killed me. Try though I might, the jobs were not to be had. References were so many scraps of paper. The old procession of failures formed now a swifter line, as the employers were not so courteous, more blunt, outspoken, no longer pulling their punches to save you. For why not face the facts?—the jobs were not to be had.

Spring came, as it always does, and there were stirrings of hope in the land! Rumors of President Roosevelt's unprecedented plan to put thousands of us young men to work, to pay us real money, to give us jobs, jobs that would occupy our time, would relieve our dread, would help our families, would let us hold up our heads once more! The rumors swelled into reality, and I enrolled—323d Co., Civilian Conservation Corps, Yorktown, Virginia.

It has taken me some time to get perspective, and to see

just what the camp has done for me, but now I am as certain as a man can reasonably be that it has been a benefit that cannot be overestimated. This is from my heart. When a man loses his self-respect, he is a sorry creature, fertile ground for all sorts of propaganda and insidious doctrines. Without a job, dependent upon the charity of others, one loses it very soon. But now I have it again, my self-respect, and I can look people in the eye!

I am a better citizen, too, because of my months in the Corps. I am more tolerant, more cooperative, better disciplined than when I went in. My mind is clearer, my muscles are harder, my duty to society more clearly defined. I can take orders and carry them out; when orders are not given, I can use my own initiative. I am healthier, stronger, more confident, self-reliant——

But above all, I have back my self-respect—the quality which differentiates a man who is still trying from a man who has quit. There was a time when there seemed no use to struggle, when the thing to do was to let things slide, and to take things as they came. No longer! The C.C.C. has given me a job, has given me a task to do, something to occupy my mind, a niche to fill. I am filling that niche. In my own eyes I am doing something worthwhile—and so long as I do that, so long as I believe in myself, everything will be all right!

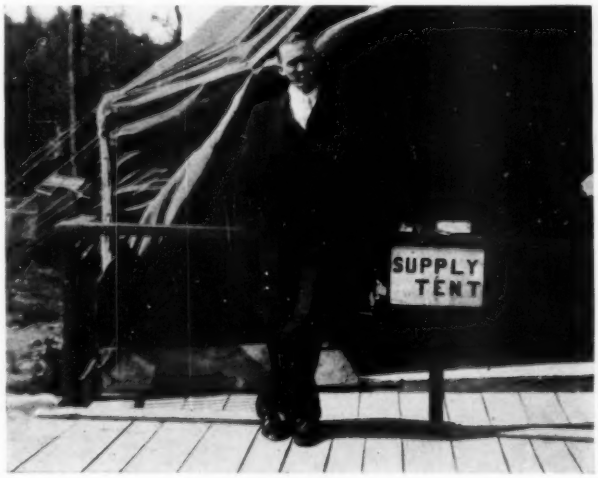
The President of the United States can claim a great glory for his administration. With his Forestry Camps he has laid the foundation of future resources, has beautified the country for future generations, but he has done a greater thing—he has strengthened the flagging morale of thousands of young citizens—and that, I can truly say, is what the Civilian Conservation Corps has done for me.

'I CAN MEET MY FELLOWS, MAN TO MAN'

By Ray Johnston

Camp P-56, Civilian Conservation Corps
DURBIN, WEST VIRGINIA

"EVER onward, ever upward, unto the infinite." So says the abounding, irresistable spirit of youth; that adolescent stage of responsibility when neither the shackles of environment nor convention suppresses the urge to live. Though down-trodden and repulsed, they are ever bounding upward to meet the onslaught of ultra-civilization. Carefree youth; restless youth; glamorous youth; fighting youth. Thats what they are, fighting youth. Fighting for happiness and for freedom; fighting for a chance. Yes, just waiting for someone to turn a kindly eye their way; waiting for someone to give them a break. Thats what President Roosevelt has done.



Ray Johnston
Fifth Prize Winner

Early one Sunday morning, if the incredible hour of five-fourty-five can be called such, I awoke to the routine of just another day. Yet on this particular morning, I was singularly possessed with a sense of appreciation that gave me a feeling that the current day was one among many rather than just one *of* many. I was impressed with the realization of the grandeur of day break, and, stepping from my tent into the early sun-light, I lifted my head in open admiration of the beauty and perfection of God's creation. So it was with the exaltation of a connosseur that I went up the oft trod path that led from camp to the majestic, wooded hills beyond.

After a few minutes of meditative climbing, I passed from the tangling undergrowth into a semi-clearing in which a huge rock formation projected itself jut-like from the ground level, thus forming a quite perfect observation stand. Mounting this improvised tower, I turned lowered eyes upon the scene below. I readily admit that unshed tears glistened in my eyes as I gazed down upon the white-topped tents, and wide, well-kept streets of the camp—my camp. I mustered masterful control to suppress heart-felt emotion as it came home just what this camp meant to me. It was then that a true realization came as to what the Civilian Conservation Corps had done for me and for thousands of other youths of America.

No longer was I crushed hopelessly in the rut of indifference through a forced dependency; no longer did my fingers twitch from restlessness nor was I haunted with worries. At last I could lift my eyes and square my shoulders and meet my fellows, man to man. I was earning unsoiled money; earning it through honest effort and willing toil. A tear, heretofore held in check, wound its course down my cheek as I thought of home and of a mother and father there. Thought of their unequaled love and of the willing sacrifices made for me. Now, and not without a feeling of pride, I thought of them resting their weary selves, just trusting and depending upon "their boy."

I took a deep breath of the pre-season frosty air and smiled in full-felt contentment. I could hardly recognize in myself that sickly under-sized boy who, just four months before had listlessly and resignigly answered opportunity's knock. Good mountain (*Continuing on page* 93)

Photograph by John Kabel

"Trees Near the Sea"

★

Winner of Second Prize—National Competition Conducted by
The American Forestry Association
for
Beautiful Photographs of Trees in America

EDITORIAL

Subsistence Homes and the National Forests

THE possible adaptability of the subsistence home idea to the National Forests should be an inviting challenge to the federal Forest Service. Foresters have always held that one of the greatest social contributions claimed by the properly managed forest is support of a permanent population. Furthermore, a permanent and dependable population skilled and interested in forest activities is a recognized asset to any forest property operated on a perpetual yield plan. And yet with a $25,000,000 program of subsistence homesteading already underway and possibility of a much larger sum being made available by the present Congress to broaden the movement, little is heard of the subsistence forest home and its place on the broad front of National Forest progress.

If private forests only were available, this would not be surprising because there is little to recommend the idea under the shifting cut-out and get-out policy that has characterized American lumbering in the past. These methods are the antithesis of the subsistence home principle, as hundreds of thousands of lumber company employees know from bitter experience. But in the case of the National Forests the situation is quite different. If there is one thing essential to the success and permanence of the subsistence home unit it is assurance of permanent part-time employment. A well managed forest operated on the cropping principle carries that assurance to a degree that few if any other industries can match. In Europe there are forest regions where the subsistence homestead has been an essential part of forest land economy for hundreds of years.

In America the National Forests furnish the same guarantee of permanence, and they should challenge the foresters who command them to explore the possibilities of the subsistence home movement as a step forward in forest development and land service. The National Forests of the West, in particular, spreading through a dozen states and embracing over 150,000,000 acres, should offer an especially attractive and profitable field of exploration because of the adaptability in many working units of permanent community homes in connection with centralized and perpetual lumbering operations. And in a larger and more appealing way, they offer the material and spiritual background for individual subsistence homes in the hills.

The western forests are dotted with thousands of small tracts tucked away in gulches, ravines, and on river benches where a man and family, often a group of families, could make homes amid inspiring and healthful environment, maintain subsistence gardens, have a few head of subsistence live-stock and obtain seasonal work in connection with forest activities. On most Forests these activities are diverse and growing more so year by year. The Government's work in fire prevention, road building and maintenance, construction of telephone lines, fire towers and other improvements, all call for a great deal of dependable labor. In addition, other avenues of seasonal employment are open with lumber companies operating on forest timber, stockmen grazing sheep and cattle on the forest ranges, the growing recreational business. Also there is opportunity for the subsistence resident to supplement his food requirements through hunting and fishing in season.

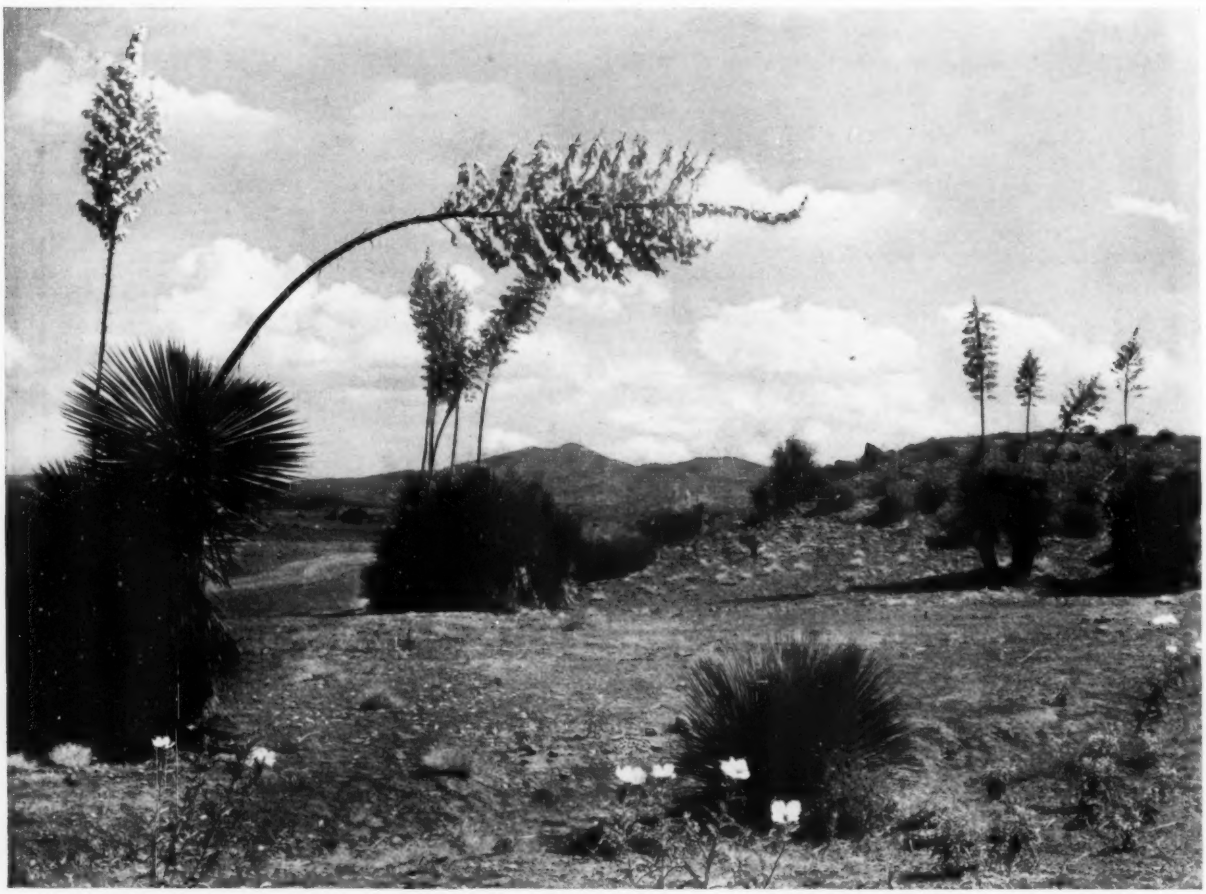
These potential home sites in the National Forests are known and mapped. This was done under the Act of June 11, 1906, which required the Forest Service to locate, survey and map all agricultural areas within the forests. A great many of these tracts were taken up under the homestead law, but many of them have been abandoned because they were not adapted to the support of a family wholly from agriculture and, for the same reason, many were never entered. By retaining title to the land, the Government could build a type of forest population best adapted to the forests and one whose individual and family lives would be closely woven into the whole forest enterprise. Such a population would be of tremendous value and significance in the future development of the forests and in the forward swing of the whole forest movement in general.

In England recent initiation of public forests carried with it the subsistence homestead idea under a plan called forest workers' holdings. Within the past two years some twelve hundred of these homes have been established and they are working out successfully. In America where public forests are of age and where the subsistence home movement may perhaps serve the dual purpose of social service and forest welfare, it would seem the part of alertness to investigate the field of possibilities seriously and earnestly. Selection of two or three National Forests as the basis for trial would provide one of the most interesting and perhaps most significant experiments in "new deal" land economy.

Nor should study of the subsistence forest home necessarily stop with public forests. It may have an enlarging opportunity in private forests. The lumber industry by its own commitment to the new deal is in process of changing its spots as a transitory industry by adoption of permanent productive methods. As fast as private forest properties are placed on a perpetual crop basis, the subsistence homestead would appear to have a logical and useful place in the whole scheme of land management.

A DESERT PLAYGROUND

By M. E. MUSGRAVE



Yucca elata, the lovely tree lily of the desert, welcomes the visitor to this sunny winter playground.

IN southwestern Arizona there is an area exceeding 19,000 square miles, as large as the combined states of Vermont and New Hampshire, which has been stamped "valueless." There is a scarcity of water, the summer heat is extreme, and the unstable supply of palatable vegetation gives it little value for the raising of livestock. In fact, grazing in the past has demonstrated that this scanty vegetation cannot be removed nor the soil disturbed without seriously endangering the land by erosion. Yet, because it is worthless to the cattleman and to the farmer, its potential economic value is beyond estimate. As a winter playground, offering beauty and recreation, it is worth its place in the sun.

The area is bounded on the south by the Mexican border and on the north by the Bill Williams Fork of the Colorado River. Its eastern line terminates where the Rio Santa Maria joins the Bill Williams Fork southward through the Vulture, the White Tank, the Estrella, the Coyote and the Baboquivari Mountains. On the west it is bordered by the Colorado River.

Practically all of the alluvial valleys in the region show that they were formerly wide, shallow drainages. Now they are deep, straight-banked arroyos through the lowest parts of the valleys with many lateral arroyos, convincing evidence that here erosion has sealed the doom of the livestock industry. Rusty windmills still stand there, and the dry weeds rustle in the bottoms of old water tanks. The stockman has gone.

But a far greater potential value lies in this so-called desert area. This may not at first be perceptible to the appraising eye of the forester, the agronomist, the horticulturist, nor to the irrigation engineers who condemn it because of its low precipitation. But let one approach it with tolerance; let him study it from new angles; and he will find that it presents an entirely new and entrancing picture. In the first place, it is not really a desert at all! There are but a few very small spots which are absolutely devoid of plant life. While it has been said that palatable shrubs and herbaceous plants are scarce, there are, scattered over this

region, thousands of small but sturdy trees and literally millions of cacti and yuccas, while seasonal rains brings out myriads of short-lived but gorgeous flowers. And far from being the lonely and deserted place which it is popularly supposed to be, the "desert" is teeming with life. In its mountains are many big game animals. Surprising as it may seem, it is a fact that here are more Mexican big-horned sheep, *Ovis canadensis mexicanus*, than in all of the rest of the United States. Here too, are considerable numbers of desert mule deer, *Odocoileus, hemionus fremicus*, whose range extends far out into the flat country. Herds of antelope once inhabited this section and are today found in similar country both to the east in Arizona, and to the south in Mexico. This area could be restocked and thus another big game animal added to its attractions.

The plant and animal life are as interesting and as attractive as those of any area in the United States. They challenge the attention of man and deserve his protection. One may go far

Ironwood and Giant Cactus are unique features of the desert road, and the seasonal rains bring out myriad gorgeous flowers.

No desert landscape is complete without them, and interesting always are the Joshua trees, with their banana-like blooms on the ends of the branches.

before he sees anything lovelier than the acres and acres of golden-flowered palo verde trees, *Parkinsonia*, which he finds here, or the landscape dotted with lavender-decked ironwood trees, *Olneya tesota*. He cannot fail to be charmed by the misty blue of the "smoke bush," *Dalea spinosa*, which swirls up among the sturdier plants. The eerie beauty of the forest of Joshua trees, or yucca, makes an indelible impression upon him; he is thrilled and awed by the ranks of the mighty sahuaros, *Carnegiea gigantea*, Arizona native palms, *Washingtonia, filamentosa arizonica*, and by the miles of native cactus gardens. Having seen it, he cannot but feel that such unique plant life should be given the same protection as was given to the redwoods.

The esthetic beauty of the desert plant life is beyond question, but there is attached to it also a very definite commercial value. Truck-loads of these cacti are finding their way into markets where they are sold for fancy prices. Last winter, a cord of ironwood from the Arizona desert sold for the fabulous price of $50 in Los Angeles. No other known native fuel-wood has such lasting quality, burns with such intense heat, and makes such a beautiful blue flame. Its consequent high market value, coupled with modern methods of transportation which are constantly cutting distances, is threatening it with extinction. The fuel value of the miles of mesquite and the palo verde is no small item of probable resource. The Acacia trees with their myriads of fragrant blossoms offer possibilities to the manufacturer of perfumes.

The adaptability of plant life to conditions in this semi-arid region is seemingly shared by the animals of the district. Kangaroo rats, prairie dogs and coyotes seem to have the faculty of subsisting on very little water. Even the mountain sheep, the antelope, and the deer manage with surprisingly little. The occasional rains fill the

Lovely indeed are the acres of golden-flowered *Palo verde* trees found here. And there are literally millions of cacti and yuccas.

tinajas, those natural rock basins in the mountains where the water is stored for a time. The succulent roots of plants and the thick bodies of some species of cacti act as storage tanks and furnish water when it is otherwise not available. With adequate protection against predators, including man, and with the establishment of more permanent water holes, these animals would increase until their esthetic and sporting value would be enormous. A magnificent ram atop a rugged mountain peak silhouetted against a desert sunset makes the nerves of the most jaded person tingle.

Erosion takes its toll from the alluvial valleys of the desert—here it has sealed the doom of the live-stock industry—the stockman has gone. But the potential economic value of the land is beyond estimate.

Each year finds the winter visitor and the health-seeker reaching farther and farther from the environs of cities and towns for rest and relaxation. There is something in the bigness and quietude of the open spaces that ministers to tired minds and bodies. During that season when the nation's vast summer recreational areas are snow-covered, the district where the public can enjoy the out-of-doors away from the centers of population is comparatively small. But here, in this so-called desert, such an area, abounding in beauty and winter comfort, is available. Just what this would mean to those seeking diversion and who are willing and able to pay for it can hardly be imagined. Just what it would mean to Arizona to attract these winter visitors can hardly be estimated. When the State realizes that it has something new to offer, it will be the dawning of a new economic era for it. Where else in the country could mid-winter big game hunting be had? Yet in a few years, the numbers of big game, if given the protection and assistance before mentioned, would multiply to such an extent that there would be a surplus which could be removed each year with benefit to the herd and to the range. The novelty of hunting in comfort in the middle of winter and securing game in good flesh would make an instant appeal to sportsmen throughout the country. Thus the potential economic value of this so-called "worthless" area is beyond estimate. A place which offers beauty, mid-winter comfort, various diversions including riding, hiking, sketching, big game shooting, and utter relaxation is worth its place in the sun.

The "desert" is not really a desert at all, but teems with life, and in its mountains are many big game animals. Here are found more Mexican big-horned sheep than in all of the rest of the United States.

CONNECTICUT IMPROVES HER TROUT STREAMS

Civilian Conservation Corps Inaugurates Pioneer Work in Developing An Important Recreation Asset

By MARY E. PASCO

Photographs by Professor A. E. Moss

CONNECTICUT, like the rest of New England, has long been conscious of the paucity of trout in her trout streams. The cutting of forests resulting in freshets, scouring of stream beds, destruction of vegetation and food supply and in some instances pollution by industrial waste account for a gradual decadence of streams once famous as trout waters. But at last much needed stream improvement has really begun and to the Civilian Conservation Corps is due the credit.

Last summer five Connecticut streams were selected for restoration of conditions favorable to trout life. Probably the most conspicuous was the West Branch of the Farmington River near Camp Robinson in Litchfield County. Every morning local residents saw a crew of C.C.C. boys being driven to the river about ten miles distant from their camp. At the river they donned boots and doffed shirts, waded out into the clear rippling stream and labored through the day building dams and current deflectors and making other improvements designed to restore the stream environment that trout demand if they are to prosper and multiply.

These stream improvement activities by the C.C.C., it should be borne in mind, are not drummed up projects merely to provide work for the unemployed or a form of subsidy in favor of the angler but they have a sound economic basis as well. Connecticut is a densely populated state. Industrial workers form a high percentage of the population in certain regions. Recreational outlets for the use of leisure time are essential to the economic welfare of the state no less than to its social welfare. Despite general recognition of the value of good fishing streams as a state asset, the resource in the past has been little developed due to lack of funds and lack of public interest.

The problem of reclaiming fishing streams is not one of reducing permits or of shortening the open season for

Connecticut has laid down a program of stream improvement to restore proper environmental conditions to her once famous trout waters and has enlisted the enthusiastic cooperation of the boys of the Civilian Conservation Corps in bringing it about. This shows a group of them hard at work constructing a rock barrier.

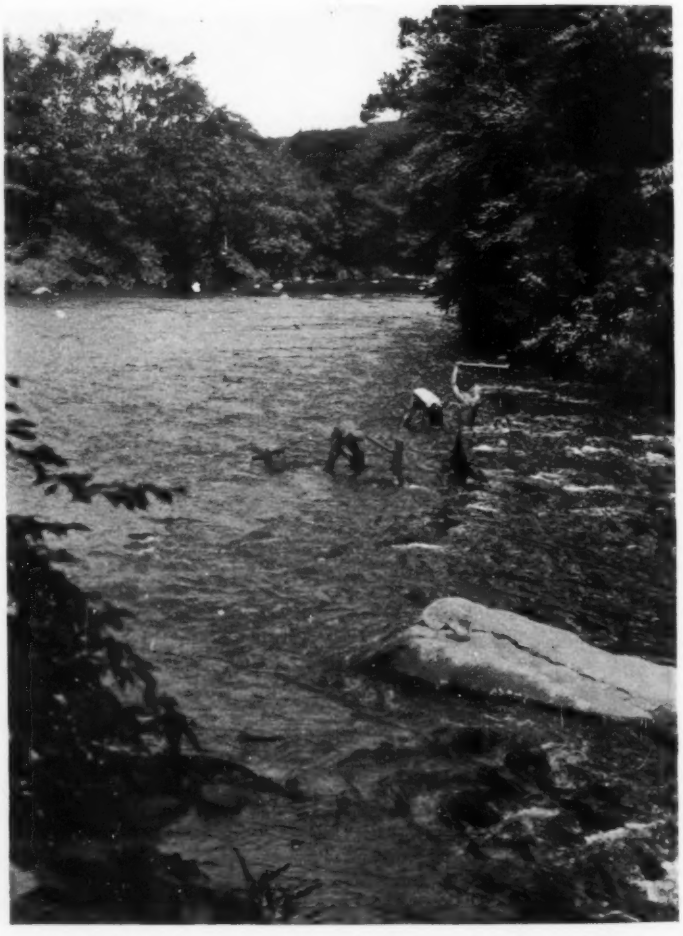
A "preview" on one of the five streams chosen last summer for improvement work to bring back favorable trout conditions. Contrast this with the last picture shown.

fishermen or of merely restocking the numerous streams. Fish science has learned that basically the problem is one of determining the factors which limit and promote the abundance of fish life. "Neither introduction, nor protection, nor stocking can grow fish," Dr. Carl L. Hubbs, Director of the Institute of Fisheries Research, University of Michigan, has stated. "To do this a suitable environment is required. Without proper environment our game fish must dwindle or disappear."

To anyone familiar with the extent to which natural environmental conditions of New England streams have been destroyed, the fundamental importance of stream improvement work will be apparent. Certain factors must, of course, be considered, depending upon the species of fish. In the case of trout, pure cold water, shelter, adequate spawning conditions, sufficient food, protection from natural enemies and disease are universal requirements. No one of these factors can be emphasized. All must receive equal attention in order to preserve a proper balance.

A few streams in the northeast possess all or most of the required environmental conditions but the majority do not. The West Branch of the Farmington River belongs to the latter type. According to authorities, its main problems are shelter, water temperature, and food supply. It is used extensively for fishing throughout the entire open season. The first week-end this past season found 159 anglers on the patrolman's books, but their total catch was only 100 brook trout and twenty-four browns. Each succeeding week-end brought an increasing number of fishermen, until the 3,200 tallied by the end of the season showed a catch of 3,161 trout, less than one trout to a man, and only twenty-five per cent of the fish planted. These figures are significant in showing the need for improvement, as there were 11,230 legal length trout from the Burlington State Hatchery put into the Farmington at intervals all through the season. And annually, for the past ten years, an average of 10,000 trout have been planted in this same stream. What becomes of them all? Obviously, many fish are lost because of unsuitable conditions in the stream.

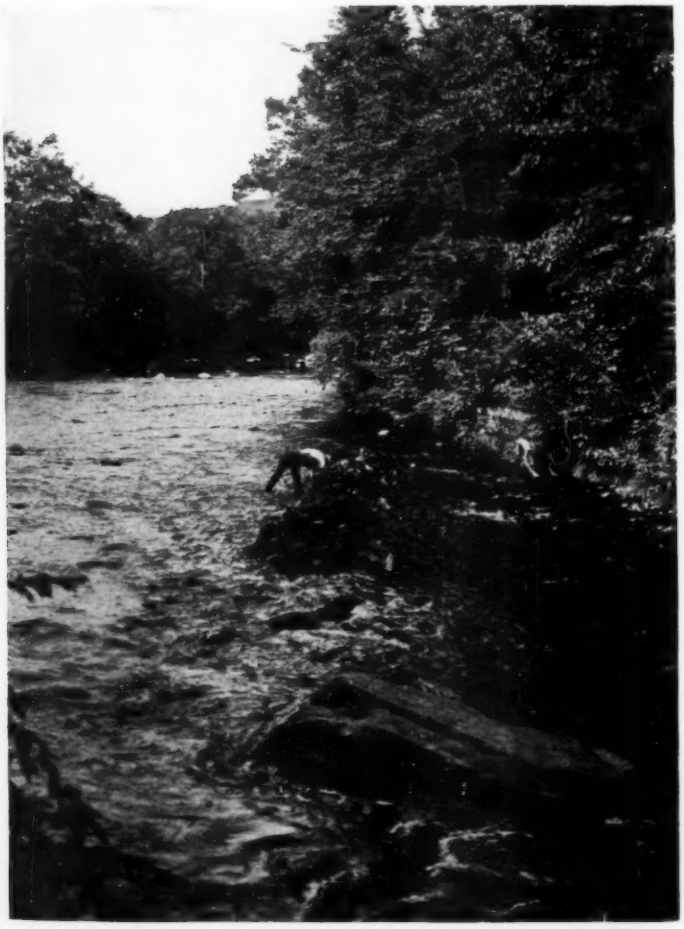
To apply western methods of improvement to a stream of eastern character



"Civies" driving in stakes. Bootless and often shirtless, they labored through the day, building dams, deflectors and other good works to secure and preserve proper living conditions for the game fish of Connecticut.

requires plenty of personal ingenuity and initiative, and this was what Arrol Lamson, foreman of the stream improvement crew of Camp Robinson and a graduate of last year's forestry class of the Connecticut State College, and his crew of C.C.C. boys were called upon to do. With advice from Arthur L. Clark, Superintendent, State Board of Fisheries and Game, and from Professor A. E. Moss, Forester at the State College, Lamson put two and two together and applied Michigan methods to Connecticut needs as skillfully as any stream conservationist could hope to do. The results have drawn the attention of anglers all over the state.

Here the logs are shown on the upstream side of a barrier, constructed to create cold pools, shelter and other environmental factors necessary for game fish.

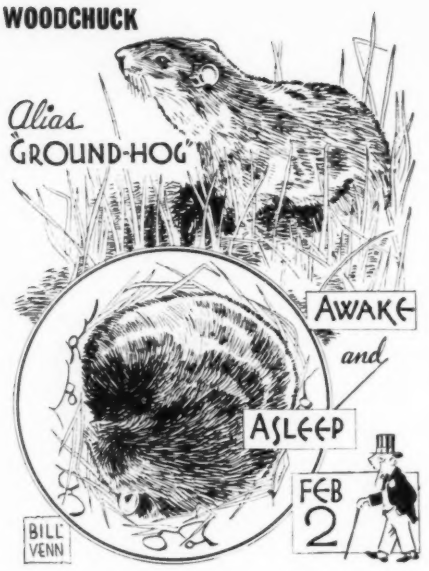


The boys put the finishing touches on a wing deflector. Note the complete change evident in the character of the stream as contrasted with the pictures on the opposite page before improvement work was started.

The building of dams and deflectors to suit the prevailing conditions was Foreman Lamson's main task. Where he felt the need of retarding swift waters and of forming pools, he and his men put in dams and barriers, and where he wished to speed up the current in shallow idle water, or to split the current, he built deflectors of various types, depending upon the particular needs of the stream. In one of the illustrations, a crew of C.C.C. boys is pictured working on a wing deflector. The rocks were salvaged from the surrounding stream bed and stacked into a pile between the stakes for a length of forty feet, and a width of six feet. It required the crew of three boys only eighteen man hours to complete the structure, and before it was half finished the character of the stream at that point was entirely changed. As the barrier gradually took form, the shelterless idle current speeded up and began gouging pools, while the water splashed with more vigor over the shallow rapids and formed the desired aerating ripples. At the end of the day there were a few new inviting spots to entice any trout cruising up or down the river in search of favorable habitat.

The boys have worked various types of river stretches. In wide shallow places they built bar deflectors across the middle which divided the flow and started the formation of deep pools. In places where the banks were held firmly with matted roots, the current was swung over against it, creating undercuts which form protected spots for pursued trout, while in still other places the current was deflected from open sunlight into the shaded parts of the stream. This latter use of the deflector not only (*Continuing on page* 92)

FIELD AND FOREST FOR BOYS AND GIRLS



HIBERNATION . . . . OR WINTER SLEEP

By Professor JOHN HARVEY FURBAY, Ph. D.

WHILE we sit about our warm fires during winter evenings, we often think of our many little animal friends scattered through the fields and woods, and wonder if they too are comfortable. We have noticed that the alert, bright-eyed little chipmunks are gone from the fences, and the sleepy toads from the gardens. How are they faring these cold days and nights? And how are their wild comrades?

There are two usual ways of spending the winter. Many animals remain active throughout the cold months, and do not seem to be greatly bothered by the low temperatures. The rabbit hops about nibbling at roots and dried leaves; and the old owl sits in the trees watching for mice and smaller birds.

Another group of animals passes the cold months in what is called "winter sleep," or hibernation. The fat woodchuck in his burrow; frogs at the bottom of the pond; and insects in cocoons or in the ground. This does not complete the list by any means. Nearly everyone who has visited long in the country is acquainted with that plump, yellowish-brown dweller of the hillsides, called the woodchuck. Many people also call him the "ground-hog," although he is no relation whatever to hogs. His nearest relations are the squirrels, chipmunks, and prairie-dogs.

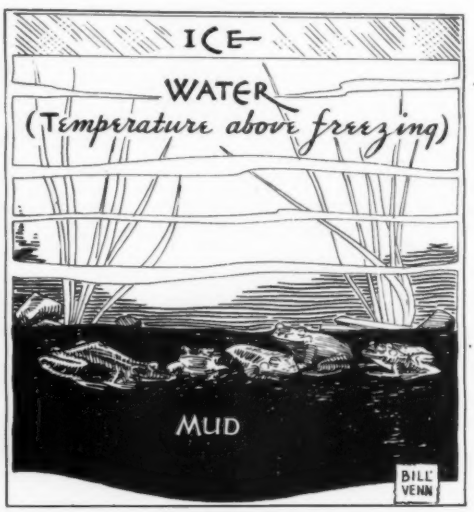
Many farmers think that the woodchuck is a harmful animal, and kill him. Let us see what he lives on, and decide whether or not he is harmful. He usually lives in burrows on hillsides or in pasture land, and he seldom wanders far from his den. His chief food is clover and other grass, which he bites off with his sharp front teeth. He seldom does much real damage to crops. Perhaps farmers dislike him more for the holes he digs in the pasture than for the grass he eats.

Many legends have centered about the woodchuck. The Indians told many tales about him. The Sioux Indians called him "Hobcusha." We have a legend which still prevails among us, and we set aside February 2 of each year as "Ground-hog Day." It is popularly supposed that if the "ground-hog" makes his first appearance on this day and sees his own shadow, he will return into his den and remain six more weeks before coming out again. This is taken to mean that more cold weather will follow. If he does not see his shadow on this day, he remains outside, and fair weather is predicted.

Of course, we know that neither the appearance of the ground-hog on this day, nor his seeing his own shadow has anything whatever to do with the weather which is to follow. Nevertheless, the custom of observing "Ground-hog Day" continues.

Snails have their way of meeting bad weather or food depressions, whether in winter or summer. They simply close up the door to their shell, and go to sleep. If one is picked up in the woods, and put in a dry cage without food and water, it will close up house in mid-summer, and remain in this condition until moisture is again provided.

Some fish enclose themselves in cocoons of mud and slime at the bottom of the stream. During mild autumn days when the birds are laboring through the air trying to reach a warmer wintering ground, Mr. Frog is lazily dreaming on the shore of some stream or lake. He is not worrying about long journeys to distant lands. He is enjoying the last warm days of the season, and catching the last stray insects. In a few days or weeks, he will have to leave his sun-bath and make his escape from the winter frosts. Just as a child delays his going to bed for sleep, just so does the frog linger as long as possible on the bank.



Frogs settled down for their long winter sleep in the soft mud.

He has no fur coat for the cold days; neither does he have warm blood within his veins. He is called "cold-blooded" because he has no internal heating system like the rabbit or man, and he cannot raise his temperature above that of the air or water

around him. He knows he cannot stand the winter blasts which will soon blow. As soon as ice starts to form, he leaps into the water and sinks to the bottom. He empties all the air from his lungs, so that he will not float; and then buries himself in the mud. His heart-beats become slower, and all signs of life soon stop. He appears to be dead, for he is not breathing. He secures enough oxygen through his skin to keep him alive, however, and what appears to be death is only a deep sleep. Here he remains through the cold winter days. When ponds and lakes are covered with thick ice, and the frost is creeping deeper and deeper into the water and ground, he is safely napping in the mud. He is not passing the winter alone, ordinarily; for frogs usually congregate in great numbers at the bottom of a pond, embracing each other so closely as to look like one solid mass.

Frogs avoid freezing temperatures. However, they may sometimes be frozen quite stiff, and when thawed out, "return to life." Contrary to popular belief, it is doubtful if one could survive if frozen solid, including his heart.

Some species of frogs spend the winter on land. They burrow down beneath the soil, under stones, old stumps, or rubbish below the frost-line. Here they sleep until spring. The common peeper can be found buried in the soil in midwinter. Toads, which are close relatives of the frogs, usually bury themselves in the ground in this same way.

Earthworms surround themselves with a secretion which hardens into thin shell called a "cyst" during certain seasons. "Summer sleep" is as common among many animals as is winter sleep among others.

The skunk is typical of animals which go into hibernation, but remain only part of the winter. The racoon and gray squirrel sleep during only the coldest part of the winter, then come out again. The chipmunk occasionally wakes up for something to eat, and the red squirrel goes into winter seclusion only as a last resort, preferring to remain abroad all winter. Bears may not hibernate at all if the winter is mild.

There have been many speculations as to why animals hibernate. Some have contended that it is because of lack of food. However, some animals go into hibernation while food is still plentiful. Others say that it is due to sudden drops in temperature. In reply, it is pointed out that toads may burrow into the ground for the winter while the weather is still warm. Turtles, even if placed in warm quarters, may go into a sleeping state until spring.

The only remaining explanation is that hibernation is an instinct. Proof of this is pointed out in various rodents, like woodchucks, which continue to remain in this sleep long after the weather has become warm and food abundant. The "hibernating instinct" of the turtle is also cited, and the cocoons of the caterpillars are mentioned.

It is apparent that no single explanation is entirely satisfactory. Perhaps all of these factors play their part, and different animals respond to different ones. Perhaps lack of food drives some into hibernation, cool weather stimulates others, and instinct still others.

Perhaps you have often asked: How long can an animal live in this sleeping stupor? Land snails have been kept in dry containers for three years and were still alive. Frogs and toads have been reported to have been kept in this sleeping state for thirty years. Warm-blooded animals rarely sleep more than a few months.

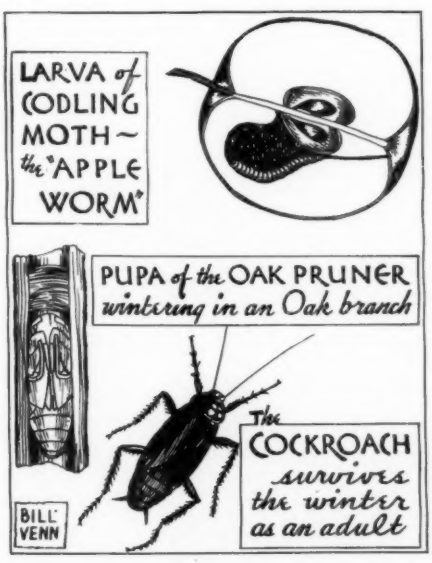
Hibernation, however, has its dangers and its hardships. It is not a "sleep of the righteous" or a warm winter nap. The hibernating animal is cold to the touch and is a good counterfeit of death itself. He is just surviving until the warm spring days arrive. The ordeal is a brave one. During the cold hours of winter he has only one thing to live for: his faith in what is almost a resurrection in the far-off spring.

INSECTS IN WINTER

THE life-histories of insects have held the interest of scientists for hundreds of years. Many are now well understood, but there are many more yet to be studied. There are more species of insects known than of all other animals combined. Over 300,000 have been named, and there are undoubtedly thousands more. Their sizes range from microscopic parasites to six-inch beetles.

Before the days of Pasteur, people thought that flies arose spontaneously from decaying meat; and that mosquitoes developed in the same way from stagnant water each summer. It was not known that flies and mosquitoes lived over winter.

Our knowledge of the life-stages of insects has greatly helped us to follow them through the winter months. We know that all insects produce eggs; that these hatch into larvae (worms), or into nymphs. The larvae are often called "maggots," "grubs," or just "worms." They eat and grow until they are ready to change form and become adults. In order to change form, they spin cocoons or secrete hard shells about themselves, and we call this the "pupa" stage or "chrysalis." Nymphs, such as grasshoppers, do not change form greatly after hatching from the eggs, but they eat and grow directly into adults.


LARVA of CODLING MOTH — the "APPLE WORM"
PUPA of the OAK PRUNER wintering in an Oak branch
The COCKROACH survives the winter as an adult
BILL VENN

In following insects over winter, we find that some pass these cold months as adults, some as larvae, some as pupae, and some as eggs. A few continue to reproduce the year around.

The most common stage for wintering is the larva or pupa. Many begin the winter as larvae, and end as pupae. The common cocoons which we find in the fall are the pupa of moths or butterflies which spend the winter in this form. The wireworm, army worm, cutworm, tomato worm, cabbage worm, Japanese beetle, horse-fly, and many others bore into the ground as larvae in the Fall, and after becoming pupae, emerge as flies, beetles, or moths in the Spring.

Other larvae winter in various places. The European corn borer larva goes into corn stalks; (*Continuing on page* 93)

SUGAR PINE

Pinus lambertiana, Dougla

SUGAR PINE is the tallest and most magnificent of all the pines. It is one of the *Quinae* — or five-leaves-in-a-bundle Pines, and is confined to a narrow strip about 1,000 miles long extending from southwestern Oregon, along the western slopes of the Sierra and Coast Ranges of California at elevations of 1,000 to 9,000 feet above sea level, to lower California. Heights of 245 feet, and diameters, breast high, of twelve to eighteen feet, have been recorded, but trees 160 to 180 feet high and four to seven feet in diameter are more common. The straight cylindrical trunk of mature trees frequently rises fifty to eighty feet to the first few long horizontal limbs which form the base of a wide crown. These great branches sweep outward and downward in graceful curves. With maturity, the spire-like outline of young Sugar Pine assumes a flattened top similar to that of old Eastern white pines. Trees attain ages of 300 to 500 years, and occasionally nearly 600 years, and stand on a broad, shallow root system.

First recorded in 1825, on the Multomah River in southern Oregon, by David Douglas, it was named *Pinus lambertiana* in honor of his friend, Dr. Aylmer Bourke Lambert, a distinguished British botanist of that time, and author of a book on pines. The name sugar pine refers to the white crisp globules of resin which exude from the bark after injury. These are sweet, with a pleasant suggestion of pitch flavor, and possess certain cathartic qualities.

Like all true white pines, the deep blue green needles which have a whitish tinge are borne in groups of five. They are two and a half to four inches long, stout, stiff, twisted, and remain on the twig through the third years. In early spring light yellow, pollen bearing flowers, half an inch to an inch long are borne in clusters on young twigs, simultaneously with light green or pale purple pistillate cones. Before maturing the cones become dark purple-brown, and stand erect, giving rise to the name "Purple-coned Sugar Pine." By August of the second year, the cones, which are the largest of all pine cones, become pendulous. They attain lengths of eleven to eighteen inches, or occasionally twenty-one inches, and two and a half to three and a half inches in diameter. In October the scales expand to release hundreds of dark, chestnut brown, winged seeds. Each has a wing one and a half to five inches long, and an edible kernel about the size of a grain of corn, which is relished by many birds and mammals. The cones remain on the tree for two or three years. Heavy seed crops occur only at intervals of four to six years and trees under twenty inches in diameter seldom bear. The seed are carried by the wind about the same distance as the height

Largest of all pines, this magnificent Pacific Coast tree attains mature heights of 200 to 245 feet.

of the tree. They germinate best on loose, moist soil with a little litter of decayed leaves.

The bark of mature trees is deeply and irregularly grooved into long plate-like ridges, covered with loose purple-brown to cinnamon-red scales, and is two to three inches thick. On young trees the bark is thin, smooth and dull dark gray in color.

The light colored, soft, straight grained wood is fragrant, and satiny when planed. It is similar to that of eastern white pine, except that it is whiter, changes color less on exposure, has more conspicuous resin ducts, and has a slightly coarser texture. The wood weighs twenty-two to twenty-five pounds to the cubic foot when air dry. Although not as strong or stiff, it enters into all the uses of eastern white pine. Its remarkable freedom from any tendency to warp and twist with changing moisture, its durability in contact with the soil, and the large boards which are possible, cause it to be used for general construction, interior trim, patterns, and model making. It is also largely used for matches.

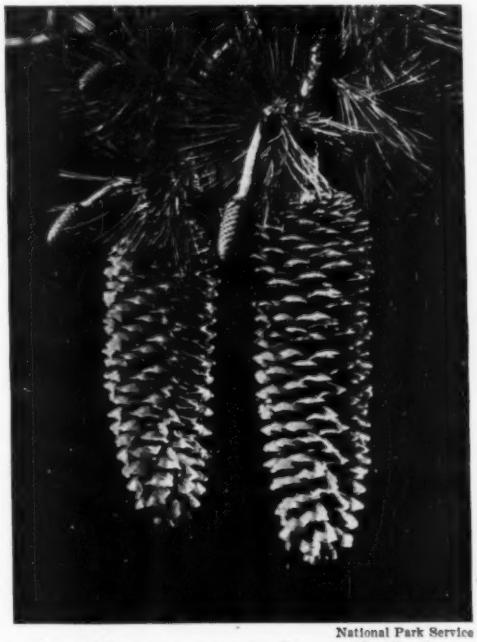
Sugar pine is produced commercially only in Oregon and California, where it ranks in volume with redwood and ponderosa pine, but exceeds either of them in value. The total production in 1932 was 47,702,000 board feet, compared with 106,139,000 board feet in 1931 and 205,159,000 board feet in 1930. Over a billion board feet have been cut since Sugar pine was first commercially produced in 1901, yet the present stand is estimated by the Forest Service to be 35,516,000,000 board feet, of which about seven-eighths is in California.

It grows at elevations of 1,000 to 2,000 feet in the Coast Range, and from 6,500 to 9,000 feet in the Sierras, in loose, deep, moist but well drained sandy loams where air humidity as well as soil moisture are favorable. Best growth is found in the mountains where the annual precipitation is forty inches or more. Western yellow pine, White fir, Douglas fir, Incense cedar, Jeffery Pine and Big Tree are its principal associates.

Seedlings and trees up to twelve inches in diameter are easily damaged by fire. Thereafter the thick bark and high crown protect the trees against ordinary fires. Lightning is a frequent source of damage because the larger trees stand out above their fellows. Young trees are occasionally attacked by mistletoe, which kills or stunts them. Snow frequently accumulates to a depth of ten or fifteen feet causing severe breakage to small trees and followed by insect damage, but until white pine blister rust entered the western forests, Sugar pine was remarkably free from serious enemies. Because of its great value the Federal Government is cooperating with California and Oregon and with private owners to control the disease by destroying all currant and gooseberry bushes within its commercial range.

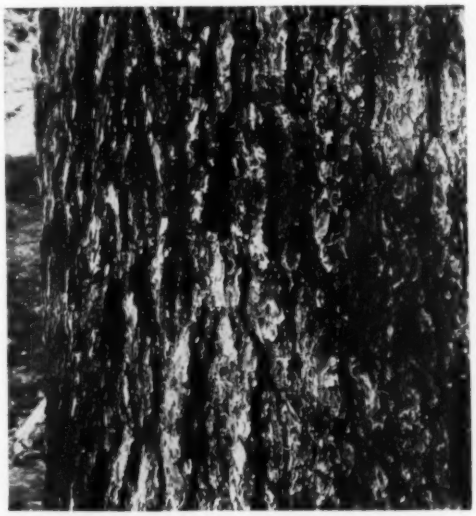
Sugar pine sustains a rapid rate of growth to a remarkably advanced age. During its first century of life, favorably located Sugar pine will average one foot in height growth each year, and acres with 192,000 board feet of merchantable timber have been recorded, while 75,000 to 150,000 board feet to the acre are not uncommon. The ability of young Sugar pine to endure shade enables it to start among other species, but as it grows older it demands more and more sunlight. It meets severe competition, however, from Ponderosa pine.

Although not widely planted for reforestation or ornamental purposes in the West, individual specimens of sugar pine have been established in a number of eastern States. It has proved hardy in sheltered locations, as far north as Massachusetts, but under these conditions grows more slowly than the native eastern white pine, *Pinus strobus*. David Douglas introduced it in England in 1827, and occasionally specimens are now found among collections of trees in various parts of the British Isles.

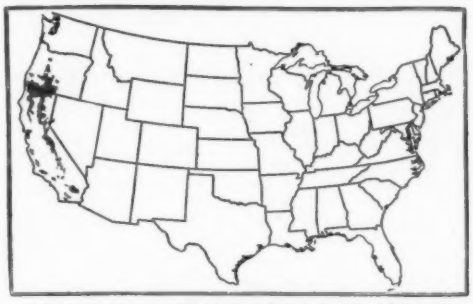


National Park Service

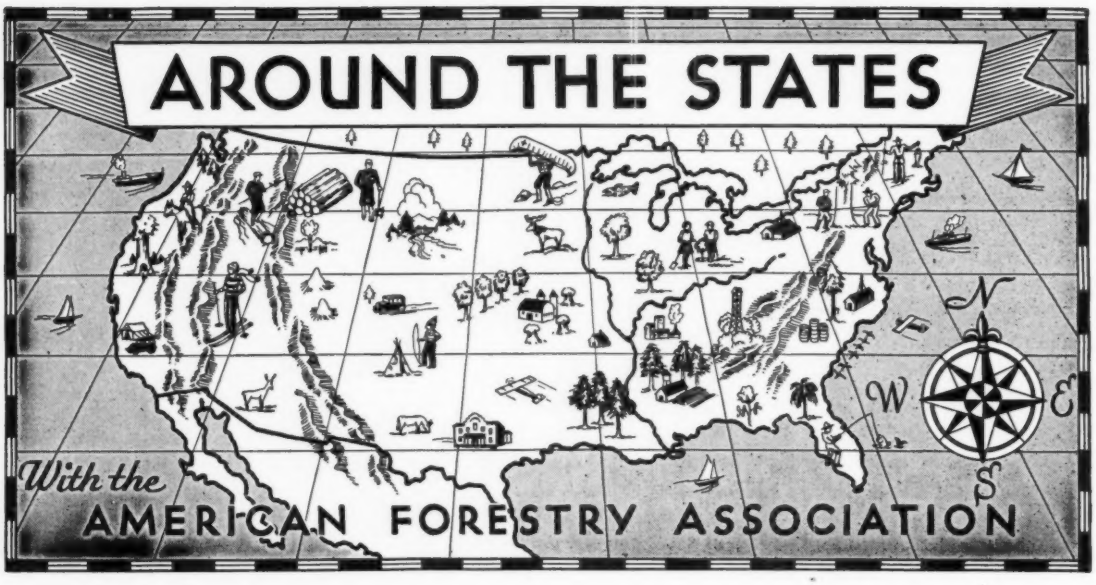
Sugar Pine cones are the largest of all pine cones, being 10 to 20 inches long, madder purple within, with the tips of the scales a rich lustrous chestnut brown.



The bark is two to three inches thick, gray-brown and broken into long, irregular ridges.



Natural Range of Sugar Pine in the United States.



Marsh Heads C.C.C. Education

Clarence S. Marsh, Dean of the Evening Session of the University of Buffalo, was selected on December 28 to head the newly organized educational program of the Civilian Conservation Corps. Mr. Marsh was named by the Office of Education of the Interior Department as Educational Director of the C.C.C. camps. He will have general charge of the educational program under the supervision of Dr. George F. Zook, Commissioner of Education.

Mr. Marsh was born in Peoria, Illinois, in 1882 and was graduated from Northwestern University, after which he taught English in the high school at Danville, Illinois. He then returned to Northwestern University for post-graduate work and remained there for eleven years, first as registrar and later as assistant dean of the School of Business. In 1923, he organized the Evening Session, an adult educational enterprise, at Buffalo University, and in 1927 he organized a School of Business Administration at the same university. In addition to being the Dean of the Evening Session, he is also Director of the Summer Session and Dean of the School of Business Administration, University of Buffalo. In 1930-31, Mr. Marsh was president of the educational department of the National Education Association, and in 1932-33 he served as president of the Association of Collegiate Schools of Business. Recently he concluded a survey of adult education in the City of Buffalo sponsored by the Carnegie Corporation. This survey has become a model for many cities.

The educational work of which Mr. Marsh is now director calls for the establishment of individual programs of instruction in each of the 1,466 forest camps operating this winter. The new educational system is to incorporate the best features of educational facilities now available in most of the camps, and the aim will be to develop a unified, informal program which will best fit the needs, capabilities and desires of the 200 enrolled men living at each of the camps. Mr. Marsh's educational force will number approximately 1,500 persons who will be added to the C.C.C. personnel. Appointments are now being made of a corps area educational advisor for each of the nine Army corps areas and a camp educational advisor for each of the 1,466 camps.

Clarence S. Marsh
Educational Director of the Civilian Conservation Corps Camps.

In announcing the selection of Mr. Marsh as director, Dr. Zook said that he looked upon the C.C.C. educational program as having great possible significance in the expansion of adult education. "If the conservation camps continue," he said, "we may be able to develop a program which will be a new departure in American education." Mr. Marsh arrived in Washington on January 2 and plunged at once into the work of organizing the general program and of putting it into effect.

800,000 Acres Approved for Forest Purchase

Purchase of 811,994 acres at a cost of $2,047,444 for National Forest purposes in twenty-two States east of the Great Plains was approved by the National Forest Reservation Commission at its meeting in Washington on January 11. These purchases will bring the total forest area approved for purchase since last spring to 2,708,251 acres, at a total cost of $5,835,828, and will complete almost one-third of the program for which President Roosevelt allotted $20,000,000 of Emergency Conservation Work funds last June.

Most of the new purchases lie in the Lake States and Southern Pine forest regions. The average price to be paid for the land is $2.57 an acre but prices ranged from $1.26 to $8.79 per acre. Lower prices prevailed in cutover and denuded lands in the Southern and Lake States, and higher prices in well-timbered tracts in the Green Mountains and the White Mountains in New England. The lands after purchase will be placed under administration and protection of the United States Forest Service. Improvement work by the Civilian Conservation Corps will immediately be extended to many of the tracts.

Purchases approved in Mississippi amount to 163,947 acres, in Michigan to 162,447, in Missouri to nearly 100,000 acres, in South Carolina to over 64,000 acres, and in Wisconsin to over 50,000 acres. Grouped by forest regions, the purchases aggregate 12,988 acres in New England, 59,275 acres in the Appalachian region, 247,399 acres in the Southern Pine region, 135,185 acres in the Ozark and Central Mississippi River region, and 256,114 acres in the Lake States region.

The Commission also ratified the purchase of 100,000 acres, in the Hiawatha National Forest in Michigan and in the Superior National Forest, Minnesota, and 1,264 acres for the McNeil Experimental Forest in Mississippi.

FLASHES
Last Minute News in Conservation

C.C.C. to Be Extended

President Roosevelt will ask Congress to authorize funds for the continuance of the Civilian Conservation Corps until April 1, 1935, according to Robert Fechner, Director of Emergency Conservation Work, following a conference at the White House on January 18. Although it was not revealed, it is believed the President will keep the Corps at its present strength of 300,000 young men, 25,000 veterans, and 14,000 Indians. The second enrollment period of six months will end April 1, 1934.

States Seek Greater Forest Protection

Called together by The American Forestry Association, a delegation of state foresters and others on January 19 appeared before the House Sub-Committee on Agricultural Appropriations to ask greater cooperative forest protection funds from the Federal Government under authorization of the Clarke-McNary Act. They asked specifically that $600,000 be added to the budget recommendations for the coming year. A similar request was made for restoration of funds withdrawn from current appropriations for cooperative forest protection between the states and the Federal Government. The delegation was headed by C. S. Cowan, forester for the Washington State Forest Fire Association. State Foresters Cronemiller, of Oregon; Conzet, of Minnesota; and Baker, of Florida, presented testimony, supported by several representatives in Congress.

Ouachita Park Bill Again Before Congress

A bill (S. 2274) to take land from the Ouachita National Forest, in Arkansas, to create a National Park was again introduced in Congress on January 11 by Senator Robinson. The bill, first introduced in 1927 by Senator Robinson and Representative Wingo, met widespread opposition on the part of conservationists on the ground that the region in question did not meet the standards of National Park lands and that the diversion of National Forest lands into National Parks would be a precedent threatening the integrity of the whole National Forest system. It was passed by Congress in 1929 but vetoed by President Coolidge. It was reintroduced again later in the same year by Senator Robinson but no action was taken on it.

Sheep versus Wild Life

Announcement came from the Senate Wild Life Committee on January 12 that in response to a resolution passed by the Izaak Walton League of America the committee would hold a hearing on January 27th to examine into the matter of grazing sheep on the Public Domain and in the National Forests with particular reference to the effect which sheep grazing has on the forest cover, food and population of wild life in the regions grazed. Harry McGuire, of *Outdoor Life*, is expected to lead a fight for the elimination of sheep grazing from the National Forests.

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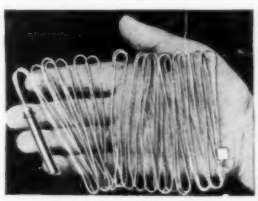
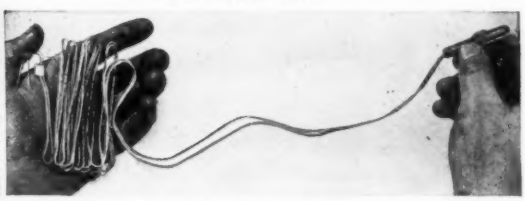


3 The wires are kept folded accordion-wise so that they extend naturally into position.



4 It is easy to straighten out the cap end for priming without disturbing the rest of the accordion fold.

HERE are pictures that tell the story of wires folded accordion-wise . . . of folds that are laid around the blasting cap to cushion and protect it at ends and sides. Pictures that show the handiness of carrying—the ease of opening—the round paper tube which completes the package that gives added safety and convenience.

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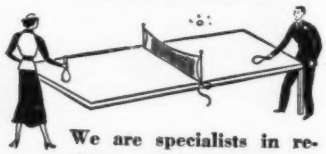

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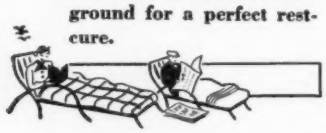

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C.C.C. RECORDS ACCOMPLISHMENTS

Report to Roosevelt Shows Vast Amount of Work Done During First Six Months

The first complete report showing the accomplishments of the men of the Civilian Conservation Corps during the initial six months' enrollment period ending September 30, 1933, was made available late in December by Robert Fechner, Director of the Emergency Conservation Work. The report was submitted to President Roosevelt and was in the form of a complete statistical compilation of the major forestry projects completed and underway. Compiled from the official work records kept at the 1,522 camps, the report reflects the great variety of activities which the C.C.C. men engaged in during the first six months' period. The great bulk of the work accomplished, the report points out, was done during the months of July, August and September, since the strength of the forest Army did not reach its peak of 300,000 men until the middle of July.

While the administration of the camps is under the War Department, the work activities of the men were under the supervision of forestry experts of the Departments of Agriculture and Interior and the forty-seven states where the camps were located. Twenty-eight camps containing 5,600 veterans did flood control work under the supervision of the chief engineers of the War Department. Of the 1,522 camps in the continental United States, 1,250 were under the supervision of the Forest Service, 175 under the Office of National Parks, seventy-one under the Bureau of Indian Affairs, twenty-eight under the Chief Engineers, three under the Biological Survey and one under the General Land Office.

In transmitting the report to President Roosevelt, Mr. Fechner summarized its statistical record in the following paragraphs:

"The records show that this army of forest workers, made up mostly of young men still in or just emerging from their teens, has made substantial progress in rehabilitating and protecting the 600,000,000 acres of forested lands in this country. It is a matter of pride to the nation and to all who had any part in this reforestation work to know that these jobless men from the cities and rural communities have labored efficiently and conscientiously not only to conserve the nation's natural resources but to accomplish work which would justify their employment in the forests as a part of the President's general relief and national recovery program. * * * *

"The reports show that a tremendous amount of constructive work that will pay big dividends to future generations has been progressing and is now going forward in every part of the nation's vast timbered domain. While more than sixty types of work are being performed by the forestry army, the great bulk of the field activities of the corps have been directed toward fire proofing the forests to the greatest possible extent, the protection of the forests from tree attacking insects and diseases which annually kill millions of valuable trees, the prevention of soil erosion which government experts state annually causes losses running into hundreds of millions of dollars and the improvement of park areas for recreational use.

"The figures on work completed show that today, for the first time in the nation's history, massed man-power has been made available for forest protection and is now at work on an unprecedented scale on projects which should reduce the huge annual losses of past years caused by fire, disease, rodents and insects. * * * *

"Among achievements which stand out in the completed program is the forest protection work done. This includes the construction of trails through the forests and parks over which fire fighting units can operate speedily in event of fire, the construction of fire breaks useful in preventing the spread of fires that develop, the removal of fire hazards such as highly inflammable dead trees and underbrush, the construction of lookout towers, observatories, fire guard cabins, shelter for fire protection equipment, the laying of field telephone wires to connect lookout houses with points of mobilization for fire fighting units, control operations against tree diseases and campaigns against tree attacking insects and rodents. The White Pine Blister Rust, one of the most serious menaces to the nation's 20,000,000 acres of valuable white pine, represented one of the major objectives of the forest army.

"Major items performed under this general heading included: removal of inflammable fire hazards from 129,962 acres; construction of 10,058 miles of truck trails; construction of 5,058 miles of telephone lines; of 3,917 miles of fire breaks; clearing 6,629 miles of roadsides as fire prevention move; construction of 1,700 lookout towers, lookout houses and tool houses; completion of insect pest control over 800,150 acres; completion of tree and plant disease control operations on 1,675,911 acres; rodent control campaigns completed on 3,566,918 acres.

"Work performed under the general title of forest stand improvement included thinning forest areas to improve the stand of valuable trees, tree planting and construction of needed buildings and bridges. The general aim of this forest stand improvement was to put the stand of timber into such condition that the desirable trees will make faster growth and the stand as a whole will produce material of better quality. Under this general heading, work projects completed included: forest stand improvement on 205,159 acres; planting of trees upon 25,750 acres and the partial completion of tree planting on an additional 54,115 acres; the completion of 67,784 man days of work at nurseries; the construction of 4,299 bridges, 347 headquarters buildings, 308 tool houses and forty-seven barns.

"Erosion control, the third major classification of work projects, developed into one of the most important phases of the Civilian Conservation Corps program. Major work performed in this field included: the completion of erosion control on 388,034 acres and the partial completion of control work on an additional 151,555 acres; the construction of 68,450 erosion control dams to regulate stream flow and to check the run-off from heavy rains; revegetation work was completed on 21,534 acres.

"The soil erosion and soil saving programs have proved of great importance to all the cooperating services in this work. The National Forest Service with its 162,000 acres of National Forest Land, the National Park Service, the Indian Service controlling several million acres of Indian Reservations, as well as state and private officials on whose land the conservation workers have operated, all agree that the work done to save top-soil has been extremely valuable. Forest Service officials refer to this type of work as perhaps

as important as any done. National Parks officials refer to the erosional control program as one of the most important undertaken by the C.C.C. * * * *

"Much valuable soil erosion and soil saving work was accomplished by the Indians on Indian Reservations. John Collier, Commissioner of Indian Affairs, has stated that the capital value of the Indian lands has been increased two dollars for every dollar spent on the Indian Conservation work. The Indian work program included construction of soil erosion dams, revegetation of lands, construction of hundreds of reservoirs to hold water for live stock, forest improvement and protection work and the conduct of campaigns against rodents such as prairie dogs.

"In addition to the major projects undertaken, much work was done in the way of restoring historical landmarks, improving facilities for protecting and increasing wild life, halting the destructive effect of coal fires on the western public lands in the vicinity of Gillette, Wyoming, improving national resources such as forage and range and clearing roadsides and trails."

New Land Policy Starts With $25,000,000

A new and somewhat revolutionary land policy has been initiated by the Federal Government as a further step in reducing crop surpluses by retiring poor farm land from active cultivation. Secretary of Interior Harold L. Ickes announced on January 3 that $25,000,000 from Public Works funds have been placed at the disposal of the Surplus Relief Corporation with broad powers to use it in buying up marginal and submarginal lands that are not subject to economic tillage.

The policy is said to have been proposed by Assistant Secretary of Agriculture Tugwell, who with Secretary Wallace has been working on plans to speed up the withdrawal of poor agricultural land from cultivation. It will seek by Government selection and purchase to withdraw from active cultivation, marginal and sub-marginal lands and to turn them to forest and other non-crop uses. The Government, it is said, has three regions particularly in mind for this experiment, the eastern Appalachian Highlands, the cutover region of the Lake States, and the western border of the Great Plains. Consideration is being given to the allocation of a certain part of the funds for the purchase of poor farm land in the National Forests and in forest purchase units upon which families are trying unsuccessfully to eke out a living.

Forest Industries Conference Held in Washington

The second conference of representatives of the forest industries, state and Federal governments, and public conservation organizations looking into the formulation of a conservation program under the Industry's Code of Fair Competition was held in Washington January 24 and 25. It was expected that the conference would complete the work begun by the first conference held in October when tentative recommendations were drafted for an industrial conservation program. These recommendations have been in the hands of the regional code authorities for the past two months, under instructions to return them with regional suggestions and recommendations for consideration at the January conference. A full report of the conference and recommendations finally agreed upon will appear in the March issue of AMERICAN FORESTS.

Taken shortly after a raging forest fire in Griffith Park, Cal., had trapped civilian foresters in a ravine, the gruesome photo at right shows fallen men, many dead, and the fire-consumed vegetation.

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Indian Fire Pumps

FORESTRY IN CONGRESS

New Federal Budget Would Reduce Conservation Funds

By G. H. COLLINGWOOD

The budget which President Roosevelt has recommended for the fiscal year 1935, if approved by the National Congress, will cut deeply into many conservation activities. Hardest hit is the work of the Biological Survey in the field of wild life conservation. The new budget calls for reductions in the Bureau's appropriations of almost fifty per cent, wipes out several important lines of work and threatens with dismissal over six hundred employees, some of whom are scientists of national recognition in wild life conservation.

Although the Forest Service sustains a cut in authorized appropriations of $3,635,309 below those of 1934, it should be remembered that heavy withdrawals were made from all this year's government funds by the Budget Director under the emergency powers given by the last Congress. These, in turn, were made up in most instances by emergency funds. Accordingly the budget authorization of $8,244,323 for general administration and protection of the National Forests and for research during 1935 should be compared with the net allotment for 1934 of $8,833,855. From the 1935 funds, however, the Service will have to provide approximately $350,000 to cover the five per cent restoration of salaries recommended by the President, and in addition, fully one million dollars allotted from emergency funds during the past ten months for regular activities, which had been curtailed after the 1934 appropriation was passed. This means that the net funds available for next year's regular activities of the Forest Service will be reduced more than $1,000,000 below those of 1934.

If this million dollar reduction is maintained there will be no regular appropriations for improvement work or planting on the National Forests, for aerial fire control, tree disease and insect control, soil erosion investigations, range and timber surveys, the maintenance, construction, and sanitation of recreational facilities, or for the nation-wide forest survey, or forest land acquisition. Insofar as these activities may be carried forward, they must be financed with emergency funds.

Clarke-McNary appropriations for 1935 for fire prevention in cooperation with the states are reduced in the new budget from $1,587,513 to $1,198,635. Here again it must be borne in mind that only $1,190,635 is actually available during the current year. This small amount is justified by the Bureau of the Budget because of emergency projects which are supplementing cooperative fire prevention and control, but men in positions of authority report that while emergency funds may be used to build fire lookout towers, there are no funds with which to man the towers or provide a force to fight fire unless adequate regular appropriations are provided.

Forest research is recommended to receive $982,053 as against the net allotment provided from the 1934 appropriation of $1,059,750. Part of this reduction is taken by the National Forest survey, which received $160,067 in the current year's appropriation but for which no money is approved for 1935. In this case the work will be financed with emergency funds. In short, the ability of the Forest Service to carry through a program in 1935 comparable with that of the present year depends on the availability of emergency funds.

The Biological Survey, however, is not so fortunate, for no emergency funds have been made available with which to replace appropriation reductions. During the current year the Survey is operating on an allocated budget of $1,017,261. The 1935 budget would reduce this to $582,741 by completely wiping out funds for studies of the food habits of birds and animals, for the production of fur bearing animals, for bird banding work, and for investigation of the condition of migratory birds throughout the country. Funds available for protecting migratory birds will be cut by almost $50,000, leaving only $118,210, while the control of predatory animals and injurious rodents will receive but $91,343 as compared with $382,981 in the present year. The acquisition of land in the Upper Mississippi Wild Life Refuge has been brought to a standstill. Out of the current year's appropriation of $18,500 only $10,018 was available for closing up individual items, and the $1,862 in the budget estimate for 1935 is barely enough to carry on the remaining office work.

At the Bureau of Biological Survey it was stated that if the 1935 budget is approved, and no emergency funds made available, the release of 622 employees will be forced. This will bring the total depletion of personnel, including permanent and temporary workers, in this Bureau to over 1,400 persons since 1933.

As this goes to press, the Agricultural Appropriation Bill has not been introduced but it is expected that hearings before the sub-Committee on Agricultural Appropriations, of which Representative John N. Sandlin, of Louisiana, is Chairman, will be held during the week of January 21.

Estimates for National Parks under the budget are comparable to those of the current year with the exception that $2,435,700 for construction of roads and trails has been eliminated. This will probably be cared for by emergency funds. The total appropriation recommended for the Office of National Parks, Buildings and Reservations is $3,091,019 as compared with the current year's appropriation of $6,225,680. Funds necessary for the maintenance and administration of many of the public buildings are included and also a new item to cover the cost of administering the National Monuments recently transferred to the Park Service.

No material reductions are contemplated in the Bureau of Fisheries. The budget recommendation of $1,252,556 for 1935 compares with the actual withdrawals of $1,242,672 permitted from the present year's appropriation of $1,765,740.. Accordingly, no new developments are planned unless additional emergency funds are allotted.

The budget estimate for the Civilian Conservation Corps is $65,000,000, as compared with estimated costs for the current year of $342,000,000. The fact that this is included in the budget is a strong indication that the work will be carried on into the next fiscal year.

Testimonial Dinner Given New Chief Forester

F. A. Silcox, new Chief Forester of the United States Forest Service, was guest of honor at a testimonial dinner held at the Hotel New Yorker, New York, on January 17 and attended by 700 representatives of the printing industry and forestry. The dinner was sponsored by the employers and the labor groups within the printing industry, with which Mr. Silcox has been identified for the past ten years in the capacity of director of the Bureau of Industrial Relations for the New York Employing Printers Association and as secretary of the Printers League Section. The latter organization is comprised of printers employing union labor whose purpose is collective bargaining on wages and shop practices and the settlement of all disputes with the printing trade unions.

In addition to the organizations within the printing industry several organizations in the field of forestry and engineering joined in sponsoring the dinner to Mr. Silcox. Among them were The American Forestry Association, the Society of American Foresters, the American Tree Association, and the American Society of Mechanical Engineers.

Oregon to Control Logging Operations

Spurred by the great Tillamook forest fire last August, which burned over 300,000 acres and destroyed timber and property valued at $200,000,000, the Oregon legislature has just passed a law which empowers the State Forester to control logging operations on the west side of the Cascades during closed fire seasons. The law, which is the outcome of a report of a special committee appointed by the Governor following the Tillamook fire, will become effective within three months.

The law declares unlawful the use of fire in any form except for fire control, or the use of any power driven machinery used in saw milling, logging, operation of logging railroads, or other logging operations during periods of the year when the forest land west of the summit of the Cascade Mountains is extremely susceptible to damage by fire due to low humidity, high wind, high temperature, the existence of an excessive amount of inflammable debris or to a combination of these conditions which warrant the State Forester in declaring that emergency fire conditions exist. The law further provides that during closed seasons it shall be unlawful for any person to use fire in any form or to use any power driven machinery in saw milling or logging on or within an eighth of a mile of forest land without first having obtained a written permit from the State Forester. These permits require the permittees to comply with certain rules and provisions designed to reduce the hazards of forest fire, and the State Forester is given broad authority in refusing or cancelling permits in the case of non-compliance with the forest laws of the State.

NEW OFFICERS

Following the report of the Elections Committee, the new officers of The American Forestry Association for 1934 will be found listed on the third cover of this issue of the magazine.

National Forest Receipts Enrich States

States in which National Forests are located are recipients of almost three-quarters of a million dollars as their 1933 share of National Forest receipts. According to the Forest Service, checks totaling $679,315 are being sent the states by the United States Treasury. These sums represent twenty-five per cent of the National Forest receipts for timber, grazing privileges, and other products and uses of the National Forests during the fiscal year 1933. In the case of Arizona and New Mexico they also represent an allocation for school funds as provided under a special act of Congress.

The ten states which benefit most largely are in the West and include California, Colorado, Arizona, Idaho, Washington, Oregon, Utah, Wyoming, Montana, and New Mexico.

The twenty-five per cent apportionment of National Forest receipts is paid annually to the States in lieu of taxes on National Forest lands within their boundaries. Thirty-one States and Puerto Rico share in the distribution of 1933 receipts. The payments to the States will be turned over for local county road and school uses in the counties including the National Forest lands.

The grand total this year is somewhat larger than last year, based on a small increase in National Forest receipts, but it is less than in years of large sales of timber. Total National Forest receipts for the fiscal year 1933 amounted to $2.626,049.

An additional fund representing ten per cent of the National Forest receipts will be made available to the Forest Service for the construction of local roads and trails within the forest boundaries.

Committee to Aid Restoration of Game Birds

Thomas H. Beck of Wilton, Connecticut, editorial director of *Collier's Weekly*, J. N. Darling, newspaper correspondent, better known as "Ding," of Des Moines, Iowa, and Aldo Leopold of the University of Wisconsin were named on January 2 by Secretary of Agriculture Henry A. Wallace as a committee to outline a course of action designed to enlarge the area on which migratory and upland game birds can be protected and propagated. The first meeting of the new committee was held on Wesdnesday, January 10, at which it considered a plan presented by the Department of Agriculture.

This plan looks to the restoration and management of water and marsh areas which constitute the breeding grounds, resting, feeding and concentration areas of migratory wildfowl. It also suggests the utilization of marginal and sub-marginal agricultural lands for the propagation of upland game birds by encouraging, aiding and educating farmers in the propagation and management of game birds as a cash crop. The plan points out how dedication of marginal and sub-marginal farm lands to game crop would aid in reducing the acreage devoted to agricultural crops. It further holds that full development of game bird resources should give profitable full time rural employment to from thirty to forty thousand men.

While federal funds are not now available to carry out the plan, it is suggested that financing might be possible through one or several of the emergency federal agencies, such as the Public Works, Civilian Conservation Corps, or the Emergency Unemployment Relief. The plan proposes that $18,000,000 be made available for the work, of which $12,000,000 would be devoted to migratory bird game restoration and $6,000,000 to upland game bird conservation.

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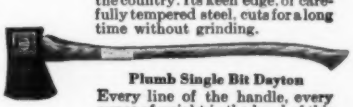

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Subsistence Homes Succeeding in British Forests

In a recent letter to the Editor of AMERICAN FORESTS, Mr. Fraser Story, Secretary of the British Forestry Commission, commenting on the success of the English plan of establishing subsistence homesteads on public forests in that country, writes: "The scheme is working well so far as existing holdings are concerned, but owing to the curtailment of funds for our forestry program generally, the scheme has been somewhat modified.

"As the result of the recommendation of the Committee on National Expenditure which sat in 1931, the Government grant for forestry was cut down by one half and drastic economies had to be made in consequence. One of the readiest means of reducing costs was to effect a saving in the establishment of new holdings. A decision with this in view was arrived at not from lack of belief in the ultimate success of the movement but because it was considered that the planting of trees was the first essential. The planting program was therefore well maintained but the holdings scheme suffered. In 1931 planting was proceeding at the rate of some 25,000 acres and it is now being conducted on a scale of about 22,000 acres per annum. Instead of about 300 additional holdings being established yearly the number was limited to actual requirements such as those of areas where no houses were available. Just under 1,200 forest holdings are however in occupation and these have been found useful and are being carefully maintained. In this regard I may quote from a speech delivered in the House of Commons on July 3rd last by one of our Commissioners, Sir George Courthope, M. P.

"'We have 1,179 forest workers' holdings and we have 16 more in progress at the present time. Of these 1,179 holdings, 108 are occupied by ex-miners from distressed areas. The average rent of a holding is 14 pounds per annum and the average area is between ten and eleven acres. The holders, most of whom, if not all, came to the holdings with very empty pockets, now own livestock which, on a conservative basis, is valued at over 37,000 pounds. They are establishing themselves as holders and as producers in the world. We guarantee a minimum of 150 days' paid work and in the majority of cases they get a good deal more and the scheme is working admirably.'"

48,000 Acres Planted in National Forests Last Fall

More than 48,000 acres of National Forest land were planted to trees last fall, the Forest Service reports. This total covers practically only a half-year, but it is greater than the acreage planted in the National Forests in any preceding 12-month period. Plantings in the National Forests in 1932 aggregated 24,900 acres. Complete figures for 1933 are not yet available.

In the 1933 fall planting, on approximately 39,000 acres, mostly in the Lake States region, the trees were set out by men from the C.C.C. camps. The other 9,000 acres were covered by men paid from the allotment from the Public Works Administration for the improvement of the National Forests. The planting crews were supervised by the Forest Service. The fall season is a satisfactory time for forest planting in some regions and on some soils, especially in the Lake States, but experience has shown that good results can be obtained only with spring planting in other regions.

Lumber Code Heads Approve Increased Production

C. Arthur Bruce, Executive Officer of the Lumber Code Authority, upon his return to Washington after attending the sessions of the National Control Committee of the Authority at Portland, Oregon, strongly defended the action of that body in authorizing production of 5,037,000,000 feet of lumber during the first quarter of 1934. Considerable curious comment has been aroused within and without the lumber industry because this authorization meant total production for the six months ending March 31, 1934, of 2,060,000,000 feet in excess of officially estimated consumption. Production of 4,885,000,000 feet was authorized for the final quarter of 1933 against the United States Timber Conservation Board's estimated consumption of 3,862,000,000 feet for the period, and the Board estimated consumption for the first quarter of 1934 at 4,000,000,000 feet.

"It is incumbent upon this industry," declared Mr. Bruce, "to recognize its responsibility to an army of employees and those dependent upon them, and to make assurance doubly sure that they will be provided with employment during the coming months. The industry is also obligated to maintain a supply of lumber adequate to meet any reasonable public demand which may develop."

Transient Work Camp in Palisades Park

The Palisades, New Jersey Section, of the Palisades Interstate Park, has been chosen as one of the first locations in the eastern states for one of the work camps for men who have been wandering, homeless, about the country, looking for work, and who are to be given an opportunity for obtaining shelter and food for the winter, in return for work on public properties. This is another of the plans of President Roosevelt for the solution of unemployment problems, such as the Civilian Conservation Corps, but differs from that already successful enterprise, through which 2,400 young men will be assigned to the Interstate Park in New York and New Jersey in that while the C.C.C. boys enlist for six months' terms at $30 per month and are under the direction of Army officers, the occupants of the camps for transients will enter them on indefinite terms and may leave at any time, and they receive only food, shelter and clothing. They are in the charge of civilian camp directors and are sent to the camps by public and private agencies.

This effort is to meet the special problem of wandering men and boys, hitch-hiking, jumping freights and tramping about the country, and tending toward winter to flock to cities, who are honestly seeking work, who are not criminals but may come from families who cannot take care of them or upon whom they do not wish to be a burden in these times.

This plan is under the direction of the Federal Emergency Relief Administration, of which Harry L. Hopkins, former director of the New York Temporary Emergency Relief Administration is the head, and under the particular direction of Morris Lewis, Mr. Hopkins' assistant. Regional offices are being set up, as central registration bureaus, for various states, where candidates for the camps are sent, and examined and approved.

The New Jersey central registration bureau is at 540 Broad Street, Newark, New Jersey, and is in charge of Cornell B. Braisted, State Manager. It is probable that the plan will be extended to New York State, with similar administrative machinery, whereby such transients can be housed and employed in the New York divisions of the Interstate Park and on other public properties.

Foresters Meet in Milwaukee

Active discussion of forestry accomplishments in the Civilian Conservation Corps and other phases of the President's Emergency Work Program, the conservation sections of the Lumber Code, the National Forestry program set forth in the Copeland Report, public forest acquisition, and forest taxation characterized the thirty-third annual meeting of the Society of American Foresters, attended by more than 235 foresters and lumbermen, held in the New Pfister Hotel, Milwaukee, Wisconsin, December 28 to 30, inclusive.

Resolutions were passed congratulating the lumber industry on assuming in cooperation with Federal and State authorities the obligations set forth in Article X of the Lumber Code and urging the whole-hearted assistance of the forestry profession toward the realization of the objectives of the Code. The Society's commitment of public and private forestry as set forth in the forestry program adopted in 1931 was reaffirmed, the general provisions in the "National Plan for American Forestry" known as the "Copeland Report" were endorsed, and responsible Federal, State and private agencies urged to make every effort to carry it out. The efficient work of the Civilian Conservation Corps was commended, and effective steps toward making it a permanent agency of the National Government subject to the rise and fall of unemployment, and so conducted as to be free from political influence, were recommended.

Because of the unusual responsibilities assumed by the Federal Government in the administration of Article X of the Lumber Code, the Society recommended that the work of a Forester to serve as Agricultural Attache in Europe be resumed at the earliest possible date. This work was conducted for two years by Arthur C. Ringland, but was stopped in June, 1933, because the available funds were exhausted.

A special resolution expressing gratitude and deep appreciation to President Franklin D. Roosevelt for his vision and inspirational leadership in the cause of conservation was also passed.

Friends of Wild Life Meet in New York

The Twentieth American Game Conference convened at the Hotel Pennsylvania, New York City, on January 22 for its annual three-day meeting. The conference brought together leaders in wild life conservation from all sections of the United States and Canada. The opening day was devoted to the presentation of papers on game breeding and wild life research. On January 23, the conference resolved itself into an open discussion of the waterfowl crisis and the remedy. Another subject discussed at this session was the duck stamp bill, which has been introduced in Congress and which is receiving practically unanimous support of wild life conservationists. The discussion of the bill was led by Senator Frederic C. Walcott of Connecticut.

On Wednesday, January 24, papers on a diversity of subjects relating to the wild life situation were read and discussed. The annual banquet, which is always a feature of the annual game conference, was held Tuesday evening, January 23. A fuller report on the conference will appear in the next issue of AMERICAN FORESTS.

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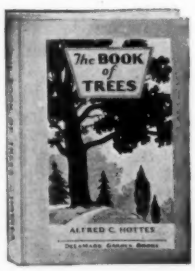

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HISTORICAL GROVES FEATURE CONSERVATION ACTIVITIES

A FIVE year beautification program was undertaken last fall by the Greater Johnstown Council Boy Scouts in cooperation with the committee directing the national nut tree planting program. A feature of the day was the establishment of an Historical Grove.

This ceremony typified others of similar character in many widely separated sections of the United States between the birthday of Theodore Roosevelt and Armistice Day. Up in Maine a park area was set aside for a grove of trees with traditions. In Wheaton and Belleville, Illinois; in Marshall, Missouri; Buffalo, New York; Celeste, Texas; Batesville, Indiana; at Lake Mohawk, New Jersey; and in three other Pennsylvania communities Historical Groves were founded.

Mount Vernon, Gettysburg, Arlington, and Shenandoah Valley walnut trees were made available by the cooperative committee representing Boy Scouts of America, The American Forestry Association, Department of Agriculture, and American Walnut Manufacturers' Association.

Johnstown Boy Scouts set themselves to rustic construction as well as to planting trees in their young forest. They will build trails and repair what they call the "Misery" or "Starvation Trail." Working with them are the District Forester, Charles E. Zerby, Camp Fire Girls, members of the Daughters of the American Revolution, and city officials. The Johnstown City Council granted them by resolution the Westmount Hillside for a five year program.

Fifteen memorial trees and 500 white pine and spruce were planted in Warren Park, Westbrook, Maine when the Historical Grove was set out in October by Boy and Girl Scouts under the leadership of Mr. and Mrs. Harry L. Pride.

Through the efforts of Mr. John M. Phillips an entire week was set aside in Pittsburgh to be known as Nut Tree Planting Week. On the outskirts of Pittsburgh, in Brentwood Park, four and a half acres of ground were set aside by the Boro Council for an Historical Grove. Scoutmaster Charles E. Robbins who has been planting trees since he was twelve years old directed boys and girls in the planting of 400 trees.

At Wheaton, Illinois, the National Headquarters of the American Theosophical Society established an Historical Grove and a nursery for growing trees with traditions. Mr. J. S. Campbell directed the project.

The price future generations must pay for war was graphically impressed on Boy Scouts at their annual pilgrimage to Gettysburg Battlefield. Because of damage done to trees which was not apparent after the battle seventy years ago, hundreds of trees must now be taken out. Superintendent James R. McConaghie made available to the Scouts part of the Devils' Den area to be used as an Historical Grove. Their initial planting there included trees from the birthplace of Abraham Lincoln, from Vicksburg Battlefield, from Mount Vernon, and from Lee's home. G. H. Collingwood, forester of The American Forestry Association, the National Director of Rural Scouting, Mr. O. H. Benson, and Scout Executive Ray F. Zaner participated in the ceremony over which Dr. S. W. Frost presided. Reverberations of the World War were brought to the young people of Batesville, Indiana, when an Historical Grove was dedicated in Liberty Park as an American Legion Memorial.

The site of the Historical Grove established at Lake Mohawk, New Jersey made a marked contrast. Following the colonial style of planting the landscape architect set out a sunken garden. There, beside a brook, trees from Mount Vernon and Arlington have been planted. They will be dedicated on Decoration Day as part of this community's project. Girl Scouts of Marshall, Missouri, marked the Founders' Day of their organization by setting out an Historical Grove in the City Park as a place of "beauty, and patriotic and historic interest."

Resourceful Scouts plant walnuts with sharpened stick during Pittsburgh Nut Tree Planting Week, sponsored by the Chamber of Commerce and the Allegheny County Council, B.S.A., under the leadership of John M. Phillips, chairman of the Forestry Committee.

Forestry Questions Submitted to The American Forestry Association, 1713 K St., N. W., Washington, D. C., Will be Answered in this Column. A self-Addressed Stamped Envelope Accompanying Your Letter will Assure a Reply.

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QUESTION: What has become of the weekly radio broadcast on forestry?—H. P. O., New Jersey.

ANSWER: The radio drama "Uncle Sam's Forest Rangers," which has been broadcast for the past two years on the National Farm and Home Hour every Thursday at 1 p. m., eastern standard time, over stations of the NBC network, has been temporarily suspended, but will be resumed about March 11.

QUESTION: What schools offer courses in wild life conservation or game management, preferably on a graduate basis? Do these schools specialize in certain phases of the subject or do they all cover about the same ground?—H. H. D., Massachusetts.

ANSWER: Through cooperation with the American Game Association we are able to state that Michigan State College, East Lansing, Michigan; the School of Forestry and Conservation of the University of Michigan at Ann Arbor; North Carolina State College of Agriculture and Engineering, State College Station, Raleigh, North Carolina; the University of Idaho at Moscow, Idaho; Utah State Agricultural College; and The University of Minnesota, St. Paul, Minnesota, have courses in economic zoology and game management.

The course under Dean S. T. Dana of the School of Forestry and Conservation of the University of Michigan, has a wild life laboratory of considerable acreage in Williamston County. Game management is actually being practiced and numerous experiments conducted there.

Most of the courses in the several colleges are devoted laregly to game on farms which is the type of game most hunted in this country. Some studies deal with the big game problem such as the management of deer herds in connection with forestry practice, etc.

QUESTION: When is the best time to transplant young pines in North Georgia?—A. W. H., Virginia.

ANSWER: One or two year old seedlings may be most satisfactorily transplanted in late February or March.

QUESTION: Kindly advise if the Chinese Chestnut will grow and produce in eastern Oklahoma, and will it resist blight?—G. D. D., Oklahoma.

ANSWER: Chinese Chestnut, *Castanea mollissima*, will probably grow and prosper in the foot hills of the Ozarks where there is relatively abundant rainfall. It will resist Chestnut blight, but will not prosper in a highly alkaline soil.

Indiana to Plant 30,000,000 Locust Trees

Black locust promises to come into its own in Indiana. The State will have approximately 30,000,000 black locust seedlings ready for planting next spring and will use them in carrying forward its soil erosion campaign. The young trees are being grown in seventeen nurseries which were established throughout the State by the Civilian Conservation Corps.

According to Virgil M. Simmons, commissioner of the Department of Conservation, Indiana virtually cornered the market in black locust seeds. Through the alertness of Ralph F. Wilcox, State Forester, who anticipated the planting possibilities inherent in the Civilian Conservation Corps, sources of black locust seed were combed, and more than three and a half tons were purchased, chiefly from Austria. Black locust seed has since been in great demand by other states which are carrying on soil erosion work through Civilian Conservation Camps.

Indiana, as a result of the purchase, is in an especially fortunate position for the continuance of the erosion work and is better equipped to proceed with this work than other states which have an inadequate supply of seedlings in nurseries. Plans are already under way, Mr. Wilcox reported, for an extensive planting program during the coming year both by the C.C.C. workers and individual farmers. Farmers are being urged to do their own erosion planting in the spring because of the greatly extended program facing the Conservation Camps.

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FORESTRY IN NATIONAL PLANNING STRESSED

Annual Report of Forest Service Features Place of Forestry in Land Use

Progress in the use of the country's forest resources as a part of national planning is recorded in the annual report of the Forest Service for the fiscal year 1933, made public December 20 by Secretary of Agriculture Wallace. "The satisfactory adjustment of our national economy to the great dual resource of soil and water requires finding the right balance of agriculture, forestry, range use, and water-resource use with each other," the report says. Therefore, the forest problem of the country "is not isolated but is a part of a much greater one, now fast coming to the fore and becoming recognized as a problem of planned development."

The National Forests, according to the report, have demonstrated how much to the public advantage it is to have land uses rationally coordinated. The principle on which the National Forests are being administered is that of coordinated use aimed at yielding the largest net total of public benefits, both in economic and social welfare. For planning the measures necessary to use efficiently the forest resource in the common interest a basis better than has ever before been available was provided by the restudy of the whole forest situation made by the Forest Service in compliance with the "Copeland Resolution" of the United States Senate. The report pointed out that less than four per cent of the nearly 9,900,000 acres of private forest land cut over annually is cut over with regard for future yields, and more than 800,000 acres are being added annually to the area that must be classed as devastated. Through tax forfeiture, millions of acres are passing into forced public ownership.

The "national plan for American forestry" proposed in the Copeland report calls for measures both to promote private forestry and to build up public forests. The President's emergency conservation work, together with improvements being accomplished under the public works program and provision for accelerated Federal land acquisition, have permitted a start toward meeting some of the objectives of the national plan for American forestry, the Forest Service report states. Most of the work undertaken by the C.C.C. was work long planned by Federal and State forestry agencies for orderly accomplishment over the years. For the Forest Service, the first step toward getting the work under way was to select thousands of these previously planned projects, and to select suitable camp locations. There was also the task of procuring and distributing tools, machines, trucks, and other equipment, and the recruiting of suitable supervisors. During the first six months, nearly 600 C.C.C. camps were located on the National Forests. The Forest Service was also called upon to supervise and assist State authorities in the conduct of all work being done from 660 camps established on State and private land.

The net area of the National Forests at the close of the fiscal year was 162,009,145 acres, an increase of 648,454 acres during the year. The 1933 fire record on the National Forests is reported as one of the best in National Forest history. In the extension of fire protection to State and private lands, the Forest Service cooperated with thirty-eight States under the Clarke-McNary Act during the year. Approximately 223,000,000 acres of State and private forest or potential forest lands were reported under some form of organized protection from fire. The acreage protected was fifty-five per cent of the total area classed as needing protection.

Estimates placed the total number of visitors to the National Forests during the calendar year at 35,718,434, an increase of more than three million. "Each year adds increased emphasis," said the report, "to the fact that public use of the National Forests for a wide variety of forms of outdoor recreation is a major use and service, for which adequate provision should be made in all plans of administration and management."

Some curtailment of regular forest research activities was necessitated during the year by the falling off in available funds. As part of the economic studies, field work was completed on the inventory phase of the forest survey of the Douglas fir region in the Northwest, and in the Delta hardwood and upland pine units in Mississippi.

CONSERVATION TO HAVE ITS RADIO DAY

During 1934, Friday of each week will be known as Conservation Day in the Farm and Home Hour radio programs of the National Broadcasting Company. The first speaker in the program was Secretary of Agriculture Henry A. Wallace who talked on "Our National Conservation Program," Friday, January 12, at 11:30 A. M., Central Standard Time, over a NBC-WJZ net work.

On January 19th, Dr. Preston Bradley, President of the Izaak Walton League, spoke at the same hour on "Conservation, the Soul of America." The speakers on January 26 will be Dr. R. A. Pearson, President of Maryland State College, who will talk on "A Sane Conservation Policy," and Dr. R. G. Tugwell, Assistant Secretary of Agriculture, whose subject will be "Planned Conservation." E. A. Silcox, Chief of the United States Forest Service, and Paul G. Redington, Chief of the United States Bureau of Biological Survey, will be the speakers on February 2. These conservation talks will all be at 11:30 A. M. Central Standard Time.

Organization of "Conservation Day" on the Farm and Home Hour program was brought about by Frank E. Mullen, Director of Agriculture of the National Broadcasting Company, who recently organized a council of conservation leaders and representatives for the purpose of arranging and promoting a weekly series of radio talks on conservation during 1934. The council is composed of representatives of the government, agricultural colleges, conservation organizations and farm groups. The American Forestry Association is represented by Ovid Butler, editor of AMERICAN FORESTS.

The term "conservation" as used in the name of the organization, Mr. Mullen explains, embraces a wider scope than is usually associated with the word. The council through the radio programs will treat all of the basic resources of the nation with discussions of the proper utilization of these resources by the people. During the year the council will develop through its radio voices the economic and social aspects of conservation.

THE MORNING MAIL

Selected Comments from the Association's Post Bag

"In the December number of AMERICAN FORESTS, Allen Cook presents, with dramatic clearness, the extraordinary transformation that has been wrought upon thousands of young men by the Emergency Conservation Work. I hope the article may be widely read. It cannot fail to impress its readers with the conviction that, great as has been the accomplishment of the Civilian Conservation Corps in forest conservation, it has proven itself an investment of even higher value in human conservation."—HENRY A. WALLACE, Secretary of Agriculture, Washington, D. C.

"The Mount Rainier pictures in the December number were very fine."—PROF. ALAN F. ARNOLD, Syracuse, N. Y.

"I have been a reader for a good many years and would not be without AMERICAN FORESTS. I do not know of any publication which so deservedly has a place in every C.C.C. camp, and we will urge this as an established policy. Such an article as Allen Cook's in the December number is an excellent argument for the establishment of the Corps on a more permanent basis."—J. D. COFFMAN, Chief Forester, Office of National Parks, Buildings and Reservations, Washington, D. C.

"The editorial, 'The Industrial Forest Conference,' in the December number of AMERICAN FORESTS is well done and will do good."—WILSON COMPTON, Lumber Manufacturers Association, Washington, D. C.

"I can't afford it (AMERICAN FORESTS), but I can't afford to be without it. This last year has been your best ever. Congratulations!"—MILLS N. WATERHOUSE, Lake Tahoe, California.

"Your Christmas issue, 1933, has been read with much interest, particularly the article 'Dawn of a New Day,' which expresses without a question of doubt the value of camp life in a Civilian Conservation Corps camp to the unemployed men. As you well know, we are all busily engaged in Civilian Conservation Corps work and do our best to carry it to a successful conclusion. The copy of AMERICAN FORESTS has been circulated in this office for all to read."—CAPT. T. H. CHAMBERS, Office of Chief of Finance, War Department, Washington, D. C.

"Mr. Norling's article, 'Sunrise and Snow,' comes out at a very prime time, as our skiing weather is just starting in. The snow scenes made by Mr. Yolo, and your beautiful reproduction of them, have received much praise."—ORVILLE L. BORGERSON, Seattle, Washington.

"There is no publication in the world that covers the ground so splendidly as yours and brings home to our people the essential value of forestry. I pass the magazine on to various Boy Scout troops, thinking it may here and there act like the seed sown by the sower in the old Biblical stories."—F. R. BURNHAM, Los Angeles, California.

"The Boys eat up—two copies of the magazine which are being sent to this Camp."—R. J. CHENNEOUR, C.C.C. Camp No. 671, Rapid River, Michigan.

New State Forestry Laws Reviewed

Strengthening of fire protection, provision for forest work in unemployment relief, and opportunities for increased establishment of public forests are reflected in recent forestry laws enacted by the various States. Liberalizing laws authorizing Federal land acquisition for National Forest purposes were passed by North Dakota, Texas, Alabama, Missouri, Wisconsin, and Tennessee. Legislation enacted in Connecticut, Florida, Montana, New Hampshire, Oregon, West Virginia, and Tennessee during the year looks to extension of State forests.

Minnesota created thirteen new State forests, and authorized acquisition of lands within them by gift, purchase, or condemnation. A newly created land-use committee in Minnesota is to classify all public and private lands in the State, principally with respect to their adaptability to present known uses for agriculture or forestry.

Various States amended their fire laws. Nevada's 1931 law providing for Federal and State cooperation in forest fire prevention and suppression was strengthened by creating a special fund for protecting forest and watershed areas. In Oregon the State forester now has authority to waive the slash-disposal requirement where burning the slash would create a further fire menace. A new Oregon law provides for a modified form of closure, corresponding closely to the Federal regulations dealing with entry into hazardous areas. Rhode Island, Vermont, Washington, and West Virginia, also added to their forest-fire legislation. Washington empowered the State forest board to use the forest-development fund to purchase land for growing timber. Previously this fund could be used only to pay interest and principal on bonds issued by the board for the purchase of cut-over lands. Another Washington law set aside a block of State land on which the timber must be handled on a sustained yield basis, the expenses of administration to be taken out of the gross proceeds.

Maine repealed the yield tax law, originally enacted in 1921 and completely revised and strengthened in 1929. Forest owners had made little use of the law until recently; but when changed economic conditions caused them to take advantage of its terms, the towns whose revenues were seriously affected insisted on its repeal.

Laws specifically directing that forest work be made to afford employment to a maximum number of unemployed or partially employed citizens of the States were enacted by several States.

Duck Stamp Bill Before The Senate

The "Duck Stamp" Bill, S. 1658, to authorize a Federal tax of $1.00 upon all licenses for the hunting of migratory wild fowl, as introduced last spring by the Senate Committee on the Conservation of Wild Life Resources, is on the Senate Calendar and may be brought up for a vote early in the present session of Congress. The Committee consists of Frederic C. Walcott, of Connecticut, Chairman; Key Pittman, of Nevada; Charles L. McNary, of Oregon; Peter Norbeck, of South Dakota; Bennett Champ Clark, of Missouri; Josiah W. Bailey, of North Carolina; and Harry Flood Byrd, of Virginia. This committee, reporting on the bill, estimated that such a tax will raise more than $1,250,000 a year, of which at least three-quarters would be available for acquiring, administering, maintaining and developing migratory bird sanctuaries, refuges and breeding grounds. By this means, nesting areas and sanctuaries for waterfowl in their migrations North and South across the continent may be assured as contemplated in the Norbeck-Andresen Act.

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1933 INDEX
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Here are a few new books, recently reviewed in AMERICAN FORESTS, and Recommended by The American Forestry Association:

CULTIVATED CONIFERS IN NORTH AMERICA, by L. H. Bailey. Recording about 1,000 species and varieties of pines, spruces, firs, hemlocks, cedars, cypresses, junipers, sequoias. araucarias and other groups grown in the region north of Mexico.

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GAME MANAGEMENT, by Aldo Leopold. The most advanced treatment of wild life conservation yet published. The author strikes boldly into the field of biological factors, and blazes a trail of scientific technique destined to be the highway along which game conservation will move forward to greater achievement.

List Price, $5.00
Price to Members, $4.50

FIGHTING THE INSECTS, by L. O. Howard. Recording the life of the scientist who with all of his responsibilities took time to enjoy many of the finer things of life.

List Price, $2.50
Price to Members, $2.25

Send for Our Recommended List

BOOK SERVICE

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Book Reviews

TRAVELING WITH THE BIRDS, by Rudyerd Boulton, published by M. A. Donohue & Company, Chicago, Illinois. 64 pages, illustrated, with twelve full size (10 x 12) color plates. Price $1.50.

Written by a student and lover of birds, and an ornithologist well known in America, this book comes to charm the youngsters and intrigue the interest of their older brothers and sisters as well. The author tells about most of the important things in the life of birds—food supply, the effects of different temperatures, crowding and light, sex, the raising of families and definite bird instincts. And among the latter is that most fascinating of all—the mysterious urge to migrate which takes these small and beautiful creatures of the air thousands and thousands of miles each year, on wonderful journeys the objective of which must ever remain a mystery, a continuing source of wonder and conjecture—much as the mystery of life itself.

It is a big book, printed in large clear type, with many black and white drawings, with full size color plates from paintings by Walter Alois Weber.—L. M. C.

COYOTE STORIES, by Mourning Dove and Heister Dean Guie. Published by The Caxton Printers, Ltd., Caldwell, Idaho. 229 pages, illustrated. Price $1.50.

This is a book of mythology and folk-lore stories,—probably never before written but which have passed down from generation to generation in the legends of the Okanogan Indians. They are told here by Mourning Dove, an Okanogan Indian woman.

Coyote Stories contains twenty-seven myths, including why gartersnakes wear a green blanket, why mosquitoes bite people, how the turtle got its tail, and why the spider has such long legs, which will be eagerly accepted by boys and girls of school age as well as by those with more mature minds.

Especial credit should be given the interesting drawings by Heister Dean Guie, which are used to illustrate the book.—J. M. N.

SEEING THE UNSEEN by Robert Disraeli. Published by The John Day Company, Inc., New York. 142 pages—Illustrated. Price, $2.00.

An interesting and beneficial book—one written and presented with the purpose of encouraging the very young scientist in his pre-high school experiments. The illustrations are microscope photographs which may well serve as an answer to the childs queries concerning apparent phenomena of nature, and at the same time to be a guide to him in his early experiments with the microscope. —M. C.

WILD PASTURE PINE, by W. W. Christman. Published by the Argus Press, Albany, N. Y. Price $1.50.

This is the third book of poetry from the pen of Christman. Life-time farmer, and lover of the soil, there is the sweetness and strength of earth in his lines, such as only one who has known earth intimately and loved her well can command. From the pine group, beginning with his chant to *The Wild Pasture Pine*—which opens and names the book—through *White Christmas*, not a line disappoints.—L. M. C.

CONNECTICUT IMPROVES HER TROUT STREAMS

(*Continued from page* 75)

attracts a fussy trout, but also assists in holding down the temperature of the water on warm days.

The question now is—will these constructions survive the spring freshet? Doubtless the stakes will hold, as they are firmly imbedded in sand and rocks, but the force of the water at flood time shifts many a good-sized boulder about its watery bed. A recent heavy rainstorm swelled the stream to almost freshet proportions and washed out two or three of the more loosely constructed barriers, leaving only the stakes. But aside from dislodging a few of the top and side stones, the rest of the barriers remained intact. If the spring freshets do no more damage than that, the cost of maintaining these constructions, which are built from materials right on the grounds, will be insignificant in proportion to the advantages gained.

Four other Civilian Conservation Corps camps in Connecticut were engaged last fall upon similar work in the state's attempt to increase the trout capacity of its streams. It is hoped that this stream improvement work will give impetus to the idea throughout the rest of New England, for its possibilities are great in the promotion of recreation.

LUMBER AND THE NEW DEAL HOME

(*Continued from page* 61)

millwork if the wood is to be subsequently soaked with water from an associated material. Almost unavoidably the added moisture swells doors and shrinks openings, bulges floors and warps millwork. If the building is dried out too fast in cold weather, the escaping moisture condensing between inner and outer walls may saturate the siding and spoil the paint. Using wood for interior finish avoids all these contingencies.

Houses built dry do not require a period for the interior finish to dry out or cure. The construction period is shortened several weeks and the carrying charges reduced proportionately.

Much trouble is caused in low cost houses by settlement of insufficient foundations. This is no brief for skimped footings, but it is a fact that wood interior finish reduces the weight of a house about fifty per cent. The lightness of the ceiling finish makes it often possible to use joists two inches less in depth. Even if settlement occurs, a flexible interior finish adjusts itself without cracks.

Added insulation due to the superior heat resistance of wood interior finish is a minor matter when stud spaces are provided, as they should be, with sheet or loose-fill insulation. Recent experiments, however, indicate that the higher surface temperature of the wood interior during the heating season has an important bearing on body comfort, as affected by radiation. Wood interior finish avoids condensation and consequent damage to decoration during sharp changes of temperature and humidity. Wood interior finish permits of more convenient and economical alterations. It also admits of more convenient access to utility equipment needing repair.

Perhaps most important from the viewpoint of really low-cost housing, either sawn lumber or plywood are well adapted to shop fabrication of walls, floors and other parts of buildings. They are available in any area or thickness required. They do not require spe-

cial preparation or processing. They are light and readily transportable; and they admit of an infinite variety of color, texture and pattern in the interior finish. It seems very probable that as time goes on more and more frame houses will be "built dry."

The number and variety of new ideas in house construction recently put forward have tended to becloud a fundamental question; namely, what is a house? There are also many millions of Americans who never have lived in a house or whose recollections of childhood days spent in a single family domicile have been lost during years of tenement existence. (A tenement is merely an apartment house in the wrong neighborhood.) Many people, in brief, have only the vaguest idea as to what a real house should afford in the way of space, comfort, light, safety, health, durability and a dozen other aspects by which a home should be judged. Many of these people, it would appear, are going back into single dwellings in the next few years, and unless they or those who provide them with such accommodations can develop a well balanced set of housing criteria much disappointment, loss and even suffering may result.

There is no accepted set of performance standards for houses and such requirements probably will vary for each climate, race and income class. It is possible at least to list many of the desirable attributes of a house and to suggest the terms of measurement in which it should be expressed. The following list will do for a beginning:

Attribute	*Terms of Measurement*
Service life	Years
Free floor space	Square feet
Cupboard & closet space	Square feet
Equipment space	Square feet
Wiring	Number outlets
Natural illumination	Lumens
Heat loss	British thermal units
Sound insulation	Decibels
Sound absorption	per cent
Heat capacity	British thermal units
Interior radiation	Degrees

Performance in terms of some of these units should be low; in others, high, for an ideal house. The balance between considerations will vary with almost every family, but the use of such a system will at least help to avoid many mistakes in low cost housing.

INSECTS IN WINTER

(Continued from page 77)

the "maggot" of the Hessian fly hides in joints of wheat stalks; the larva of the codling moth spins a cocoon of silk under loose bark on tree trunks; a bot-fly larva may be found in the digestive tract of a horse in winter; while the Ox-warble larva is feeding beneath the hide of some gentle cow.

Another common way for insects to pass the winter is in the egg stage. The adults lay their eggs in the late summer or fall in some secluded place where they can be protected till spring. These insects usually die after laying their eggs. Grasshoppers deposit their eggs in packet-like masses an inch or more beneath the surface of the ground. The Tent caterpillar moth fastens its eggs on twigs in fruit trees. Eggs of plant lice are found glued to various perennial plants. The gypsy moth eggs are hidden under stones, on tree trunks, or on buildings.

Another group of insects spends the winter as adults. Houseflies and clothes moths remain in warm buildings till spring. Cockroaches seek out dark basements. The female (queen) wasp hides under leaves in the woods. Female ants likewise live through the winter and start new colonies the following season. Adult Cotton boll weevils seek old fence rows and other protected places. The tobacco flea beetle hides under leaves or trash on the ground. The Colorado potato beetle (common "potato bug") buries himself several inches deep in the ground. And the common "stink bug" secludes himself along old hedge-rows and roadsides till spring.

These insects which spend the winter in the adult stage start laying eggs almost as soon as they emerge in the spring. They seldom ever live to see another winter, for they usually die soon after laying their eggs.

A few unusual cases deserve attention. The seventeen-year locust lays its eggs in mid-summer. These hatch in six or seven weeks into tiny larvae which drop to the ground, bore into the soil, and live for seventeen years sucking the sap from tree roots. They then bore to the surface and emerge (usually at sunset). After crawling up tree trunks, they split their skins, and come out as full-sized locusts, ready to mate, lay eggs, and to die in about a month.

Some other insects live through many seasons. The female ant may live twelve to fifteen years. Other insects, like the cock-roach, chicken louse, bedbug, and sheep tick, may continue to reproduce throughout the year, and all the stages may be found at one time.

In general, few insects ever live for a whole year. In nearly all cases a "new crop" arrives annually. Most insects lay eggs and die before their children are born. The life cycle from one adult to another may be as short as ten days, or as long as seventeen years.

"WHAT THE C.C.C. HAS DONE FOR ME"

(Continued from page 67)

air, wholesome food, and regularity of habits had transformed me into a healthy, vivacious youth, twenty pounds heavier and one hundred per cent happier. Emotion again possessed me as my mind wandered from realities and my present position, back to the boys in that camp below—friends all. How welcome to my ears was that "Hello pal," or "what do you say, old man?" Brothers they were, going hand in hand with me in quest of the finer things of life.

The early morning breeze sifted through the surrounding trees and gently carressed me. An involuntary "oh" escaped my lips at the splender of the scene directly below me. A somewhat sizable grove of trees lay between camp and point of visage and now, as the heavens breathed down, they became as graceful harlequins. Here, a stalwart birch or sturdy spruce; there, a slender white maple; all weaving before the wand of the wind. I was awed by the beauty. What a message those abstract objects conveyed to one of a receptive mind or to one so completely lost to the wonders of nature as was I.

It slowly dawned upon me as to the full significance of my part in the reforestation program. I was actually acting in the capacity of "keeper,"—pledged to protect those trees from the dangers instigated by my thoughtless fellow man. I was over-whelmed by the mere thought of being a benefactor and yet that is exactly what I was. I was doing my humble part in a gigantic program

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set aside to restore to our great continent that which God gave to us but which a too interprizing man had taken. I was helping to make it possible, through the building of passable roads, for that man to see the greatness of God's handiwork with the hope that he might see how small and ordinary he was beside it. I was helping, through the clearing of undergrowth along those roads, to insure that beauty against the perils of a carelessly dropped match or of a cigarette thrown from a passing car. At that moment, it didn't seem a bit unusual that I had joined the forces of nature in combating the selfish blindness of my fellow creatures. I thought of the trees as sort of material comrades who, in my time of need, had lent me strength and inspiration and for whom I was willing to give my all. Moreover, I was assisting nature by replacing what had been so causually removed. Yes, I was truly a benefactor.

My meditation was rudely broken by the piercing shrillness that came floating up to me from the valley below—the "chow call." I was suddenly aware of a human hunger and so quickly dropped to the ground and hastened my steps campward. As I crossed the rustic bridge that stood as a portal, I took one last look at my wooded rendevous, then turned back towards camp and back to the routine of another day.

HALTING EROSION

(*Continued from page* 65)

of depletion that gullying usually sets in—a final stage of erosion which permanently destroys so much land.

Bad as has been the combined effect of gullying and sheet washing, it is the latter type of erosion that has caused the greatest impoverishment of the crop and grazing lands of the nation. And here is where the tragedy comes in: Tens of thousands of hard-working farmers are now tilling stubborn clay subsoil that once was covered with rich mellow loam. This erosion-exposed clay bakes and cracks and resists the efforts of animals straining at the plow. The evil of erosion is not a threat of the future to those operating on these denuded areas. Here is a tragedy of the present—farmers without real farm land, working from sunrise to sunset to gain the barest subsistence. Their houses and the grounds about them bear the unmistakable stamp of poverty. Men and women and children have been beaten down to the lowly level of subsoil farming, correctly called bankrupt farming on bankrupt land.

Estimates indicate that every year three billion tons of soil material are washed out of the fields and pastures of the nation. More than four hundred million tons of suspended solid matter and many more millions of tons of dissolved matter pass out the mouth of the Mississippi River annually. This comes largely from the farm lands of the Mississippi Basin. The greater part of this water-transported material, picked up from plain, prairie and mountain slope, consists of super-soil, enough of it to build 1,250 farms of 160 acres each, all having a depth twice that of the average upland soil of America. Many have used the expression "as rich as the soil of the Nile" without knowing that the alluvium of the Mississippi flood plain is still richer.

Three billion tons of soil lost every year is an incomprehensible quantity. To haul its equivalent from our fields and dump it into the oceans and valleys would require the simultaneous loading of a fleet of trucks running six thousand abreast, every minute throughout every day and night, year in and year out. If it is possible to visualize such an unending parade of hurrying trucks, then one can develop a fairly clear picture of the prodigious cost of this annual washbill of the fields of America.

When this soil has departed from its place of origin it cannot be hauled back. We can restore land which has been sapped of its plant food by continuous cropping, if the solid soil material still remains in the field; but the soil removed by erosion can not be restored for the simple reason that not merely the plant food is taken, but also the humus, the mineral soil particles and the myriads of beneficial microscopic organisms dwelling within the soil.

Many graphic and tragic examples of land and property destruction in virtually all regions of the United States might be cited. This article will confine itself to one. Three years ago the Bureau of Chemistry and Soils of the Department of Agriculture made a very detailed soil survey of the comparatively narrow strip of alluvial land along the Rio Grande, above the head of water in the Elephant Butte reservoir in New Mexico. Immediately after completing the survey, a great flood came down the Rio Grande, probably the greatest of all time. In places seven feet of sand were deposited over the old alluvial plain. Soils that had been mapped as clay were changed to deep sand, and sandy lands were changed to deep clays. The survey, which extended about forty miles up the river, had to be made over. When it was again completed, it was learned through the measurements taken that approximately 100,000,000 tons of soil material had been laid down over this small area by this flood. How much was dumped into the reservoir was not determined, but obviously the amount was very large.

Most of this eroded soil came out of the Puerco River, a tributary of the Rio Grande. After looking over the devastation that had taken place above Elephant Butte, where one town was destroyed and another very nearly destroyed and where several million dollars were required to repair damages to railways and other structures, the writer made a survey of representative portions of the watershed of the Puerco. On the overgrazed uplands it was impossible to find any of the original topsoil, below the line of forests, except about the base of an occasional tree. Not only this, but the channel of the main river had grown from what once was a mere depression meandering through a grass-covered plain into a great gorge four hundred feet wide and fifty feet deep in places. Part of one village had toppled into the steadily enlarging channel. Every alluvial plain of every tributary examined had its new channel cutting away at the most productive soil of the region, the rich accumulation of thousands of years.

This year a similar survey was made on the Navajo Indian Reservation, where much the same conditions were found—conditions that must be corrected if the Navajo race is to survive within its allotted domain.

But what part of the Southwest is free from this devastating scourge? Where is there any considerable area of alluvial land in this region that is not being cut away by these new arroyos, representing the product of increased run-off from uplands stripped of

(*Continuing on page* 95)

Conservation Calendar in Congress

Published monthly while Congress is in session as a service to the members of The American Forestry Association. This calendar contains bills introduced at the Second Session of the Seventy-third Congress convened on January 3. All bills introduced during the special session of Congress, which adjourned on June 15, retain their places on the Calendar and may be considered during the present session. Whenever acted upon, previously listed bills will be described in the Calendar, otherwise they may be considered as in the same status as when last printed.

S. 1973—NORRIS—To improve navigability of Missouri River; to provide flood control of Mississippi River and Missouri River; to provide for irrigation, reforestation, agricultural and industrial development, and the preservation of the water level in the Missouri and Mississippi Valleys, and for other purposes. To Committee on Irrigation and Reclamation, January 4.

H. R. 6368—MARLAND—To provide for control of flood waters of Arkansas River; to provide irrigation, agricultural development, and terracing of lands in Arkansas River Watershed; to provide for development of electrical power in such watershed; the reforestation of lands and the well-being of people living in the Arkansas River Watershed. To Committee on Flood Control, January 4.

H. R. 6483—FULMER—To provide for the construction of works for flood control and improvement of navigation in the Congaree, Santee, and Cooper River Basins. To Committee on Flood Control, January 5.

H. R. 6613—SMITH—To provide for the construction of works for flood control, the prevention of soil erosion, and the improvement of navigation in the larger rivers in the State of Washington. To Committee on Flood Control, January 9.

H. R. 6202—MARTIN—To add certain lands to the Mount Hood National Forest in the State of Oregon. To Committee on Public Lands, January 3.

S. 2019—BORAH—To establish the Boise National Mountain Park in the State of Idaho. To Committee on Public Lands and Surveys, January 4.

H. R. 6462—TAYLOR—To stop injury to public grazing lands by preventing overgrazing and soil deterioration, to provide for their orderly use, improvement, and development, to stabilize the livestock industry dependent upon the public range, and for other purposes. To Committee on Public Lands, January 5. (This bill is identical with H. R. 2835 of the 73d Congress, First Session, with the exception that Section 13 is omitted from H. R. 6462.)

H. R. 6174—DIMOND—To extend the benefits of the several Acts authorizing agricultural experiment stations and agricultural colleges in the States, to the Territory of Alaska; and to provide funds for carrying this into effect. To Committee on Agriculture, January 3.

S. 1982—MCNARY—To add certain lands to the Mount Hood National Forest in the State of Oregon. To Committee on Agriculture and Forestry, January 4.

S. 1983—MCNARY—To authorize the revision of boundaries of the Fremont National Forest in the State of Oregon. To Committee on Agriculture and Forestry, January 4.

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HALTING EROSION

(*Continued from page* 94)

a large percentage of the vegetation that stabilized the country before the advent of the white man with his herds and flocks? Remembering that these valley lands constitute almost the only high-quality crop land within the region and that the upland ranges are necessary to the continuing existence of the livestock industry, what is to become of this country unless something is done now to control erosion?

The answer, I think, is contained in a telegram received November 14, 1933, from Dr. W. C. Lowdermilk, after making a survey of erosion conditions in southwestern Arizona. This read: "Time has come to coordinate all phases of problems of grazing, erosion, control of water supply and agriculture in the Southwest, otherwise the civilization of this region is doomed."

Much the same situation confronts vast areas of the nation's indispensable crop lands, now eroding at rates that no land can long withstand. To bring erosion under control and assure permanence of soil which is analogous to permanence of the nation is the herculean and long-range purpose of the Government's new Soil Erosion Service.

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AMERICAN FORESTS Magazine

"WHO'S WHO"

AMONG THE AUTHORS IN THIS ISSUE

Reginald D. Forbes

REGINALD D. FORBES (*The Thousandth Acre*) is a graduate of Williams College and the Yale Forest School. He was the first State Forester of Louisiana, from 1917 to 1921. For the past twelve years he has been director of Federal forest experiment stations, first in the South and later in the East. He is at present Director of the Allegheny Forest Experiment Station with headquarters at Philadelphia, Pennsylvania.

DAVID H. CANFIELD (*Crater Lake in Winter*) is located at Klamath Falls, Oregon, where he is Chief Ranger of Crater Lake National Park. Mr. Canfield, who is a graduate of the University of Minnesota, began his Park service experience as a temporary ranger in Glacier National Park and has also served in Yellowstone National Park.

FRANK P. CARTWRIGHT (*Lumber and the New Deal Home*) is Chief Engineer of the National Lumber Manufacturers' Association, with headquarters at Washington, D. C.

MARY PASCO (*Connecticut Improves Her Trout Streams*) is connected with the Forestry Department at Connecticut Agricultural College, where she is specializing in forestry and biology.

H. H. Bennett

H. H. BENNETT (*Halting Erosion*) is Director of the Soil Erosion Service of the Department of the Interior. He was reared on a farm in North Carolina and before entering the State University managed a cotton farm there. He taught chemistry at the University for several years after he graduated. Mr. Bennett has long been engaged in scientific and practical studies of the soils of this and other countries and has made surveys in Alaska, Panama, South America, and Cuba. He was formerly with the Bureau of Chemistry and Soils of the Department of Agriculture.

JOHN HARVEY FURBAY (*Field and Forest for Boys and Girls*) is professor of Biology and Director of Nature Education, at the College of Emporia, Kansas. He is also well known as a lecturer and nature guide, and is director of mastodon excavations in Indiana. He is a native of Ohio, and was educated at Otterbein College, Ashbury College, Ohio State University, where he received an M.S. degree, and Yale University, a Ph.D. degree. He writes us that his hobby is the making of scientific motion pictures.

M. E. MUSGRAVE (*A Desert Playground*) is Game Specialist for the United States Forest Service with his headquarters at Albuquerque, New Mexico. He was born in the mountains of northern California and has spent the greater part of his life in the West. In his early life he spent several years as a sailor, but his love for the woodlands overcame the call of the sea and during the remaining years his studies of natural history have led him through varied experiences in plant collecting, plant breeding, tree surgery, city forestry, park planning, and, in 1916, took him to New Mexica and Arizona, where he directed the work of predatory animal control for the United States Biological Survey. He became Game Specialist for the Forest Service in 1930.

M. E. Musgrave

LEE G. CRUTCHFIELD, JR. (*It Has Given Me a Niche to Fill—"What the C.C.C. Has Done for Me"*), fourth prize winner in the contest conducted by The American Forestry Association, is an enrolled member of the Civilian Conservation Corps, attached to Company 352 at Yorktown, Virginia. At present, however, he is detailed as Clerk with the Supervisor of Sub-District No. 20 at Fort Monroe, Virginia. Now twenty-two years old, Mr. Crutchfield is a graduate of the University of Richmond, where he specialized in chemistry. Graduating at an inopportune time, he held various odd jobs and for a year had no work at all until in June, 1932, he enlisted in the Corps. He writes, "Though no closer to actual forestry work than a typewriter desk, spend most of my leisure time in woods and fields with trusty shotgun trying to figure out how far to lead fast-flying birds. . . . Like athletics, particularly track . . . . fair swimmer, rotten with shotgun. . . . Like almost everything good to eat, also duck hunting and chemistry."

RAY JOHNSTON (*I Can Meet My Fellows, Man to Man—"What the C.C.C. Has Done for Me"*), fifth prize winner in the contest conducted by The American Forestry Association, is an enrolled member of the Civilian Conservation Corps, attached to Camp P-56, at Cass, West Virginia. He graduated from high school in 1929 at Portsmouth, Ohio, his home, and attended Ohio State University until the spring of 1932, where he was enrolled in the College of Education. "I was employed as bookkeeper before entering the Civilian Conservation Corps and I am acting in the capacity of Supply Sergeant here at camp." He is twenty-two years old.

G. H. COLLINGWOOD (*Forestry in Congress*) is Forester for The American Forestry Association.

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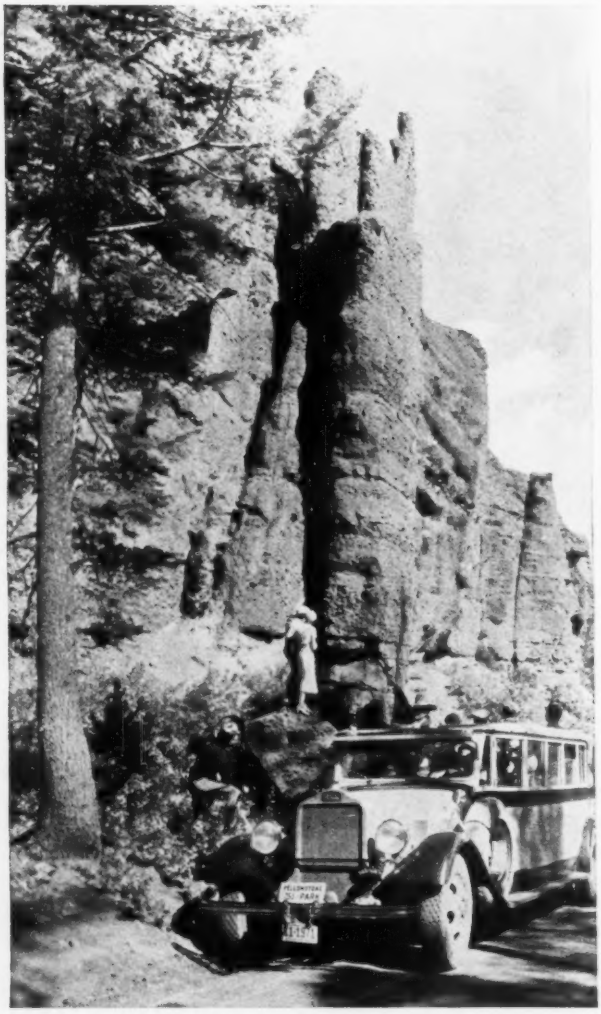

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